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Atlas of Oceanographic and Ice Conditions in the N.E. Newfoundland Shelf and Northern Grand Bank, March-April 1990

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1991

Canadian Data Report of Hydrography and Ocean Sciences No. 105

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Canadian Data Report Of Hydrography and Ocean Sciences

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Les établissements des Sciences et levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports en décembre 1981. Une liste complète de ces publications figure dans le volume 39, Index des publications 1982, du *Journal canadien des sciences halieutiques et aquatiques*. La série actuelle a commencé avec la publication du rapport numéro 1 en janvier 1982.

Canadian Data Report of

Hydrography and Ocean Sciences No. 105

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by

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Abstract

Tang, C.L. and Q.Y. Gui 1992. Atlas of Oceanographic and Ice Conditions in the N.E. Newfoundland Shelf and Northern Grand Bank, March-April 1990. Can. Data Rep. Hydrogr. Ocean Sci. No. 105: viii + 189 pp.

Oceanographic and sea-ice data collected during a field experiment of the Labrador Ice Margin Experiment (LIMEX) in March-April 1990 are presented in a graphic format. The data include ocean temperature/salinity, current, ice drift, and surface wind.

Résumé

Tang, C.L. and Q.Y. Gui 1992. Atlas of Oceanographic and Ice Conditions in the N.E. Newfoundland Shelf and Northern Grand Bank, March-April 1990. Can. Data Rep. Hydrogr. Ocean Sci. No. 105: viii + 189 pp.

On présente ici, sous forme graphique, les données océanographiques et les données sur la glace marine recueillies en mars-avril 1990, lors d'une expérience sur le terrain réalisée dans le cadre de l'Étude de la zone marginale des glaces du Labrador (LIMEX). Elles portent notamment sur la température et la salinité de l'océan, sur les courants, sur la dérive de la glace et sur les vents de surface.

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1. Introduction

The distribution and movement of sea-ice in the continental shelf regions are strongly influenced by the oceanic properties and currents. Water temperature controls ice melt at the ice-water interface. The release of fresh water from ice melting can modify salinity and density distribution in the upper water column. The change in the density field can affect the mean current, which advects the sea-ice. The interactions between the sea-ice and the ocean play a key role in our understanding of the dynamics and thermodynamics of the coupled ice-ocean system.

In this atlas, ice and oceanographic conditions during a period in the early spring of 1990 are presented in graphic forms. The period corresponds to the time of the maximum southward advance and beginning of retreat of the ice east of Newfoundland. The information on ice conditions is based primarily on the daily ice charts issued by the Ice Centre Environment Canada. The oceanographic data were collected from a cruise onboard CSS Baffin from March 25 to April 14, 1990. The cruise was part of the Labrador Ice Margin Experiment (Tang, 1987; Carsey et al., 1989), a multi-disciplinary research program to study the Labrador pack ice.

This atlas is one in the series of data reports for the eastern Canadian marginal ice zone. The other volumes in the series are:

1. "Ice-based Oceanographic Sea-ice and Meteorological Data obtained over the N.E. Newfoundland Shelf, 1988-1989" by D.B. Fissel, A. van der Baaren and C.L. Tang. Canadian Data Report of Hydrography and Ocean Sciences No. 75: vii + 165 pp.

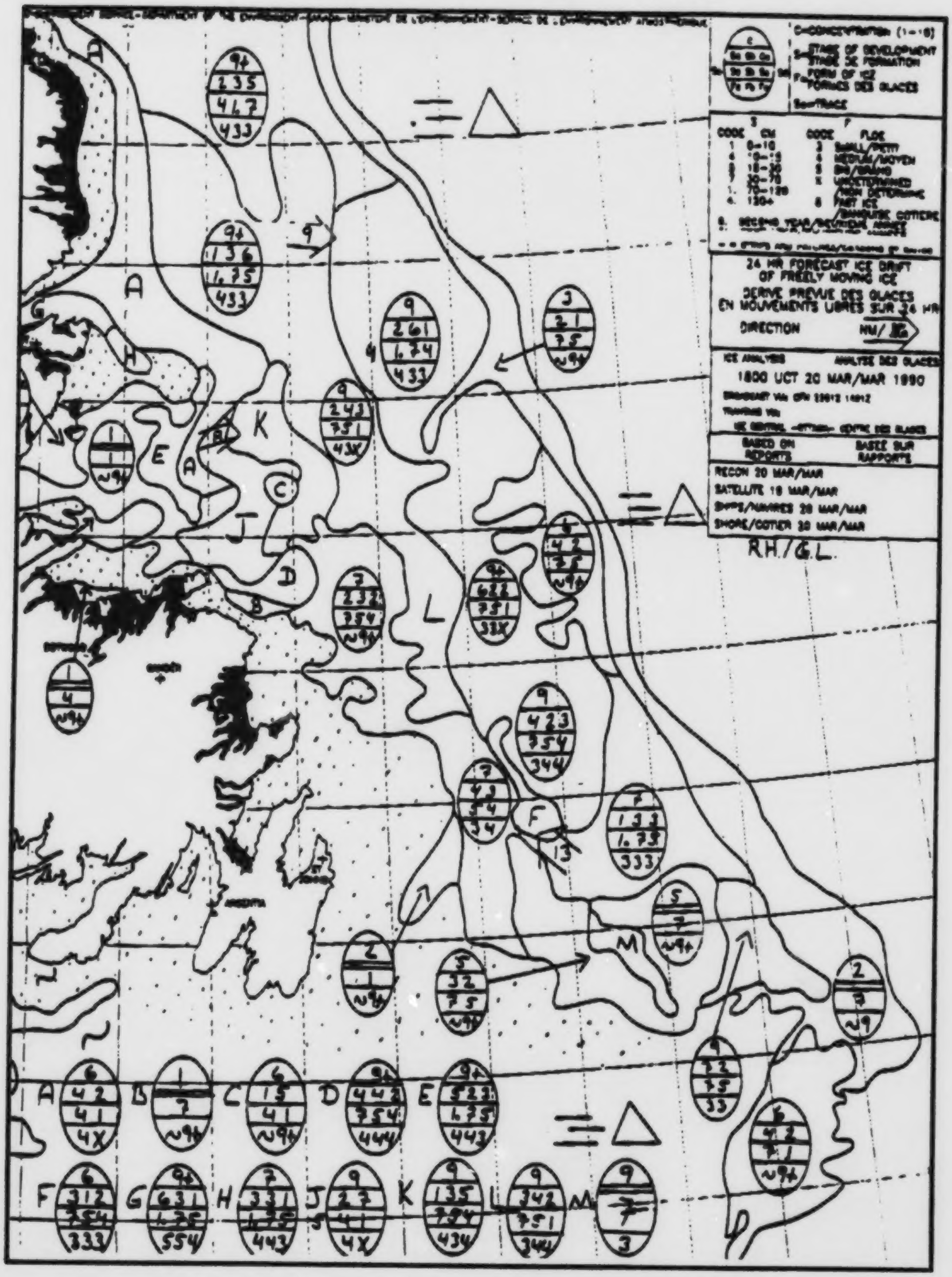
2. "Oceanographic Observations during LIMEX, March 1987" by C.L. Tang. Canadian Data Report of Hydrography and Ocean Sciences, No. 72: vii + 202 pp.

3. "Sea Ice Observations during LIMEX, March - April 1989" by W.D. Winsor, G.B. Crocker, R.K. McKenna and C.L. Tang. Canadian Data Report of Hydrography and Ocean Sciences, No. 81: iv + 43 pp.

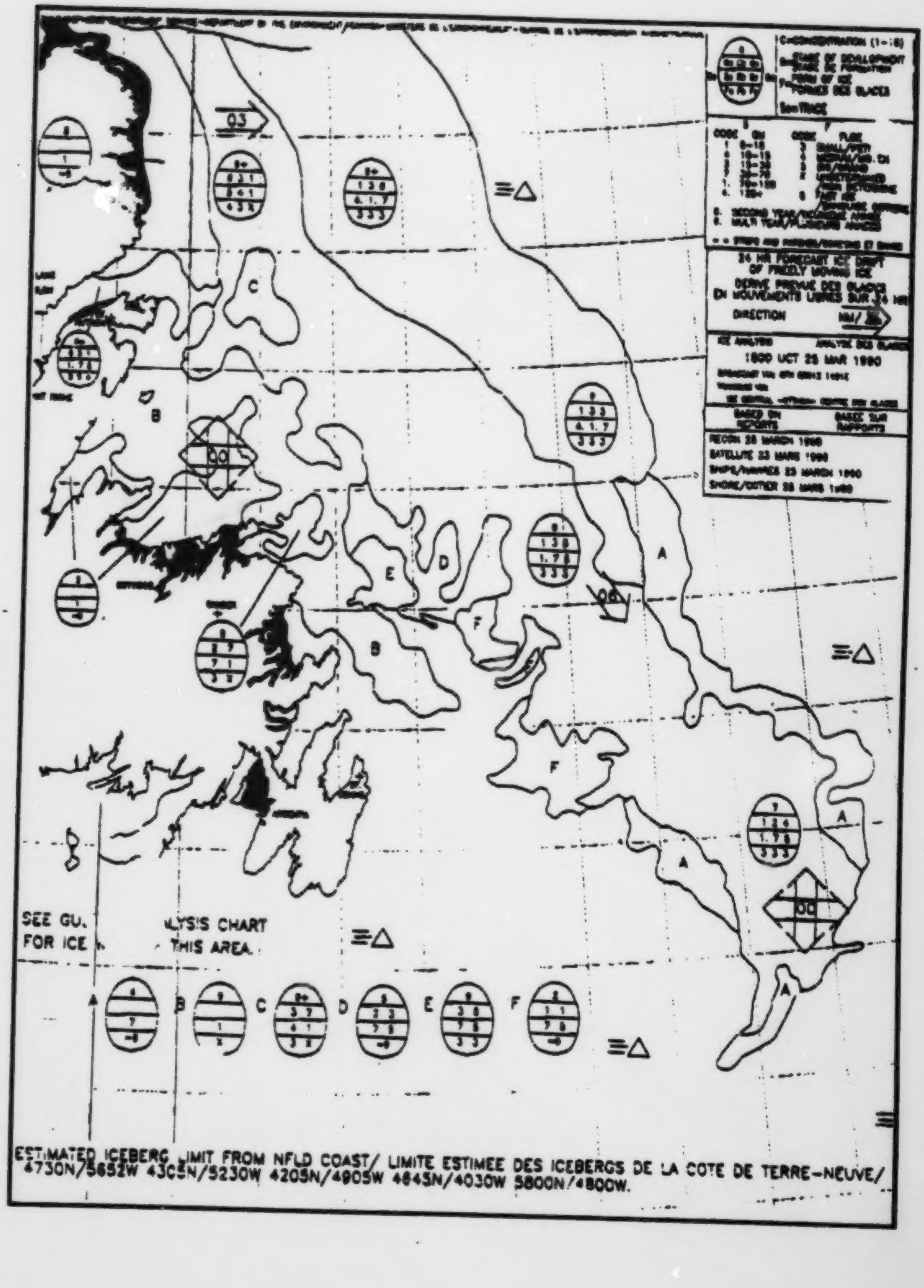
2. Ice conditions

Ice conditions for selected days in March - April 1990 are shown in p. 4 to p. 9. The ice condition charts were produced by the Ice Centre Environment Canada using information derived from reconnaissance flights, satellite images, and ship reports.

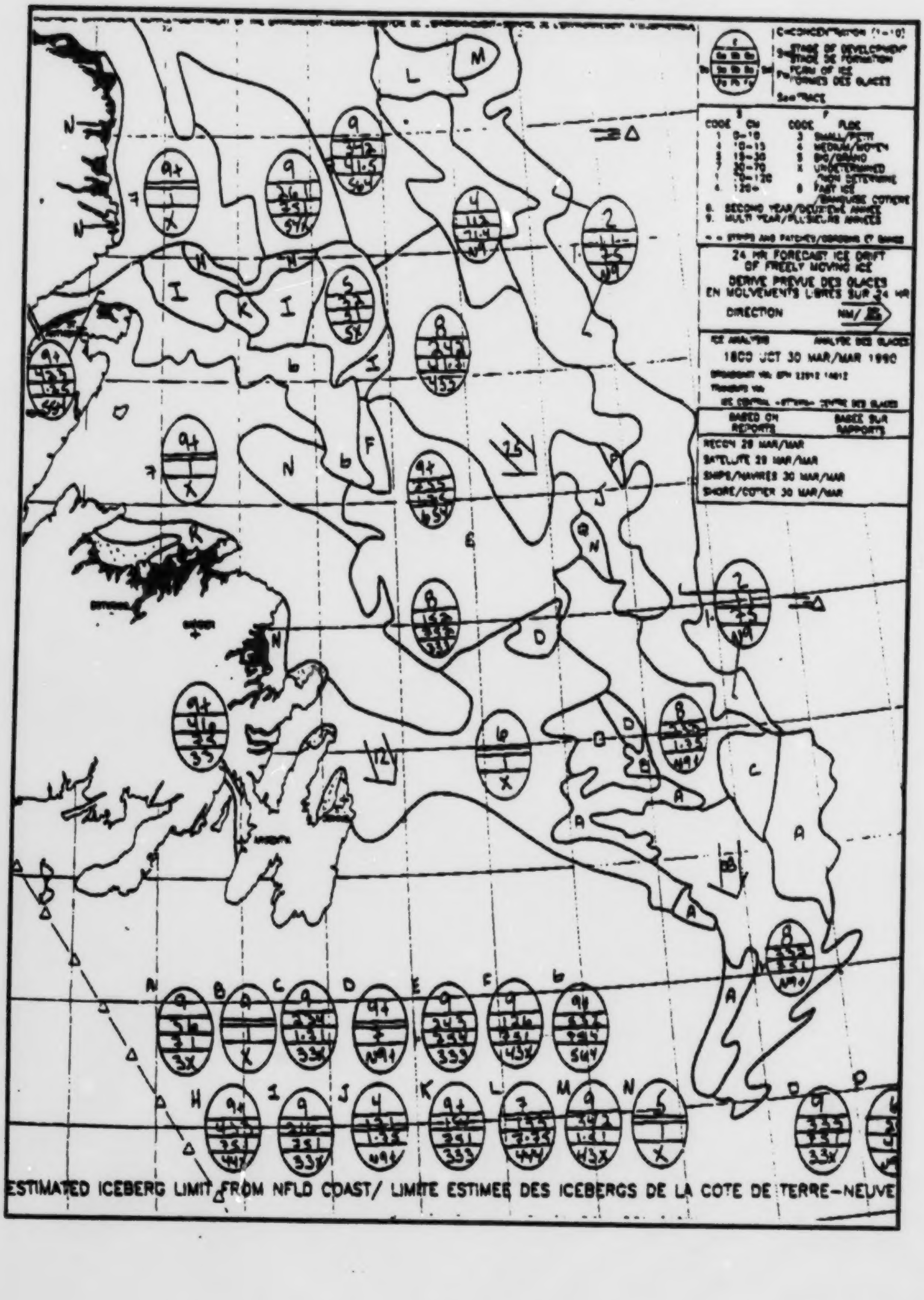
Ice conditions for March 20,1990


C=CONCENTRATION (1-10)
S=STAGE OF DEVELOPMENT / STAGE DE FORMATION
F=FORM OF ICE / FORMES DES GLACES
S=TRACE
CODE CM
1 0-10
4 10-15
5 15-30
7 30-70
1. 70-120
4. 120+
CODE FLOE
3 SMALL/PETIT
4 MEDIUM/MOYEN
5 BIG/GRAND
X UNDETERMINED / NON DETERMINE
8 FAST ICE / BANQUISE COTIERE
24 HR FORECAST ICE DRIFT OF FREELY MOVING ICE
DERIVE PREVUE DES GLACES EN MOUVEMENTS LIBRES SUR 24 HR
DIRECTION
NM/
ICE ANALYSIS
ANALYSE DES GLACES
1800 UCT 20 MAR/MAR 1990
ICE CENTRAL -OTTAWA- CENTRE DES GLACES
BASED ON REPORTS
BASEE SUR RAPPORTS
RECON 20 MAR/MAR
SATELLITE 19 MAR/MAR
SHIPS/NAVIRES 20 MAR/MAR
SHORE/COTIER 20 MAR/MAR
RH./G.L.
A
G
H
E
K
C
J
D
B
L
F
M
13
9

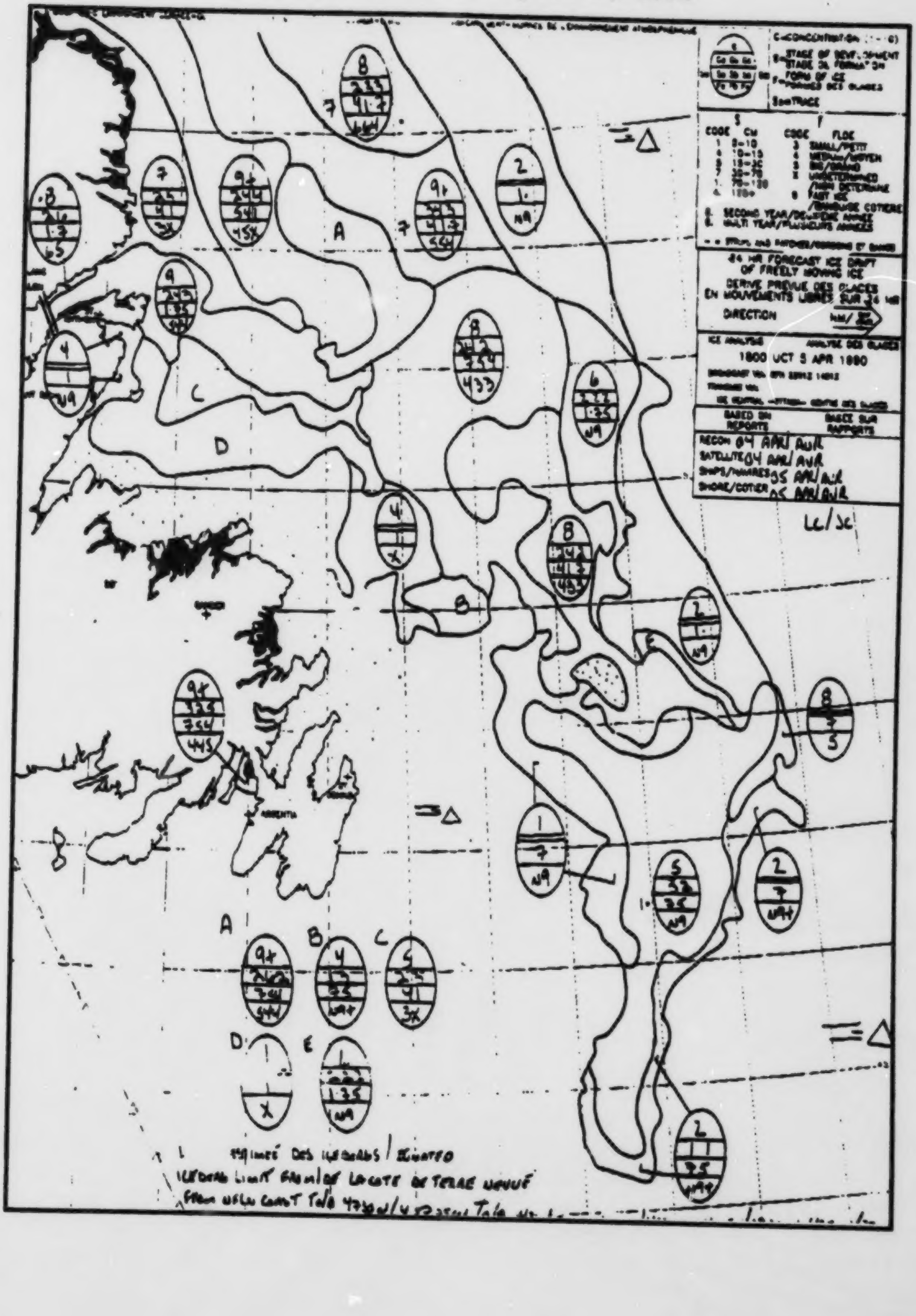
Ice conditions for March 25, 1990


CONCENTRATION (1-10)
STAGE OF DEVELOPMENT
FORM OF ICE
FORMES DES GLACES
TRACE
CODE
FLOE
SECOND YEAR
MULTI YEAR
24 HR FORECAST ICE DRIFT OF FREELY MOVING ICE
DERIVE PREVUE DES GLACES EN MOUVEMENTS LIBRES SUR 24 HR
DIRECTION
NM/
ICE ANALYSIS
ANALYSE DES GLACES
1800 UCT 25 MAR 1990
BASED ON REPORTS
BASEE SUR RAPPORTS
RECON 25 MARCH 1990
SATELLITE 23 MARS 1990
SHIPS/NAVIRES 25 MARCH 1990
SHORE/COTIER 25 MARS 1990
03
06
00
A
B
C
D
E
F
SEE GU. ALYSIS CHART FOR ICE THIS AREA.
ESTIMATED ICEBERG LIMIT FROM NFLD COAST/ LIMITE ESTIMEE DES ICEBERGS DE LA COTE DE TERRE-NEUVE/ 4730N/5652W 4305N/5230W 4205N/4905W 4645N/4030W 5800N/4800W.

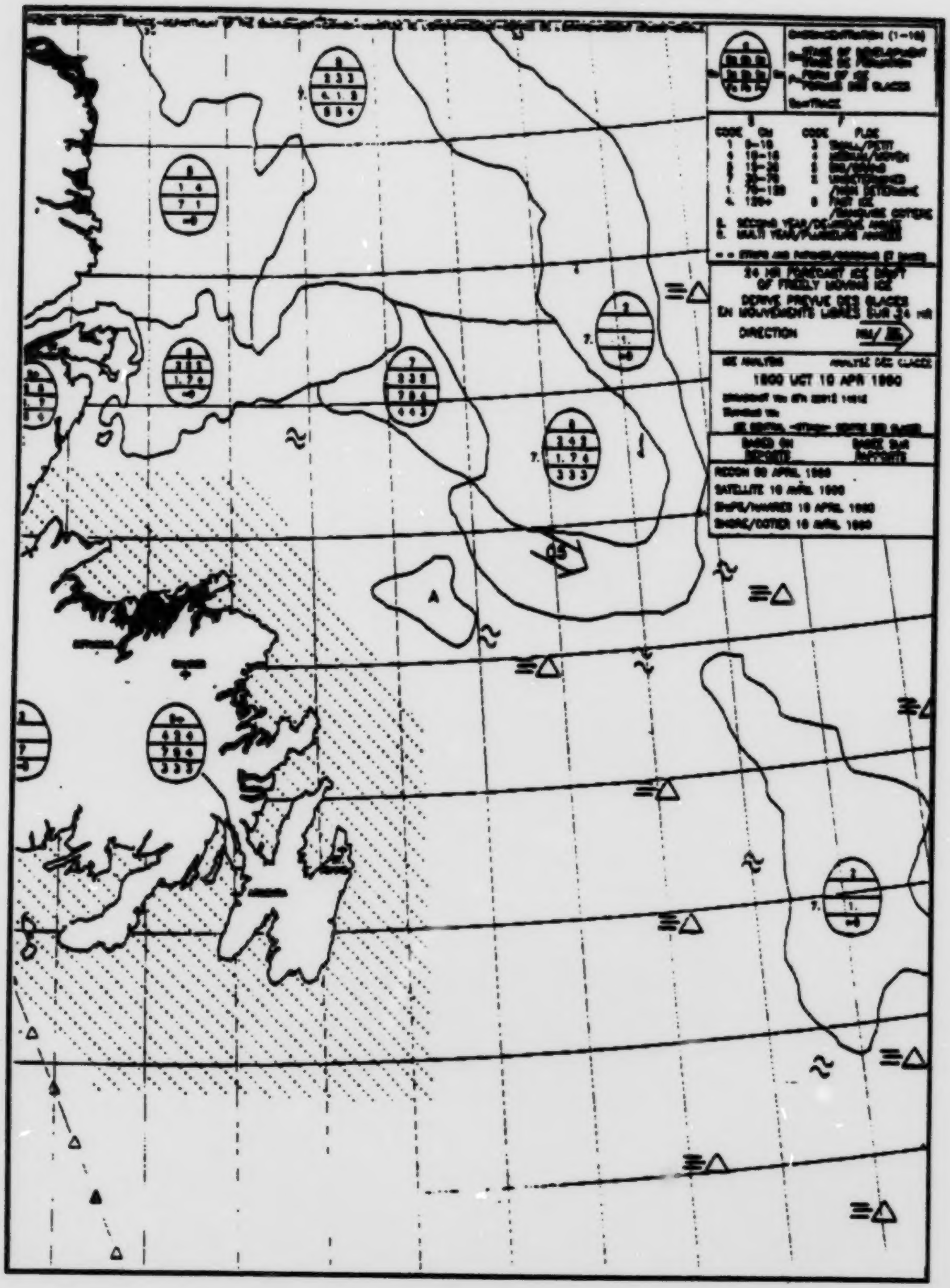
Ice conditions for March 30, 1990


C=CONCENTRATION (1-10)
STAGE OF DEVELOPMENT / STADE DE FORMATION
FORM OF ICE / FORMES DES GLACES
CODE CM CODE FLOE
1 0-10 3 SMALL/PETIT
4 10-15 4 MEDIUM/MOYEN
5 15-30 5 BIG/GRAND
7 30-70 X UNDETERMINED / NON DETERMINE
1• 70-120
4• 120+ 8 FAST ICE / BANQUISE COTIERE
8• SECOND YEAR/DEUXIEME ANNEE
9• MULTI YEAR/PLUSIEURS ANNEES
STRIPS AND PATCHES/CORDONS ET BANCS
24 HR FORECAST ICE DRIFT OF FREELY MOVING ICE
DERIVE PREVUE DES GLACES EN MOUVEMENTS LIBRES SUR 24 HR
DIRECTION NM/
ICE ANALYSIS ANALYSE DES GLACES
1800 UCT 30 MAR/MAR 1990
ICE CENTRAL OTTAWA CENTRE DES GLACES
BASED ON REPORTS BASEE SUR RAPPORTS
RECON 29 MAR/MAR
SATELLITE 29 MAR/MAR
SHIPS/NAVIRES 30 MAR/MAR
SHORE/COTIER 30 MAR/MAR
ESTIMATED ICEBERG LIMIT FROM NFLD COAST/ LIMITE ESTIMEE DES ICEBERGS DE LA COTE DE TERRE-NEUVE

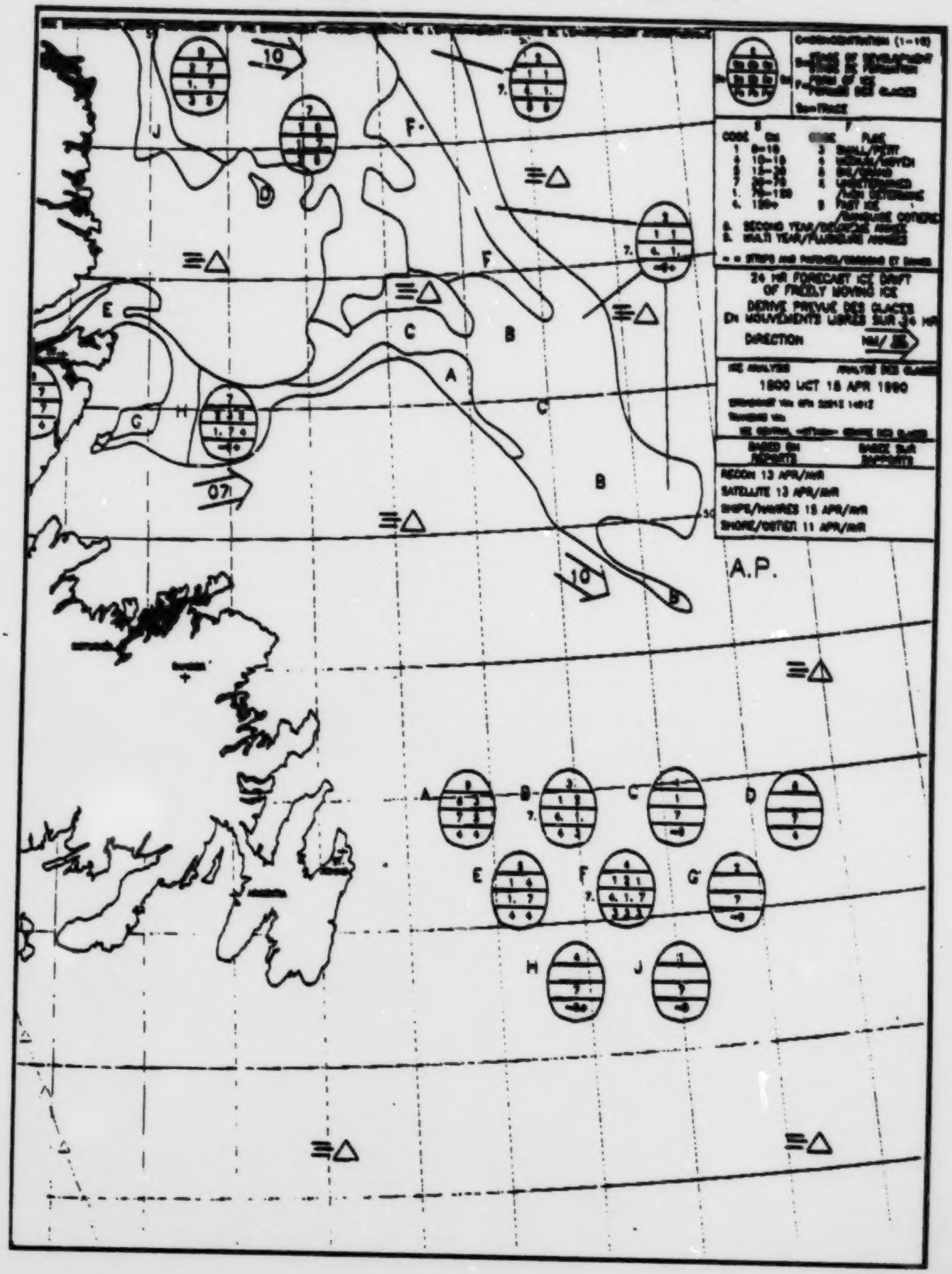
Ice conditions for April 5, 1990


C=CONCENTRATION
S=STAGE OF DEVELOPMENT / STADE DE FORMATION
F=FORM OF ICE / FORMES DES GLACES
S
F
CODE
CM
1
0-10
10-15
15-30
7
30-70
1.
70-120
4.
120+
CODE
FLOE
3
SMALL/PETIT
4
MEDIUM/MOYEN
5
BIG/GRAND
X
UNDETERMINED /NON DETERMINE
8
FAST ICE /BANQUISE COTIERE
SECOND YEAR/DEUXIEME ANNEE
MULTI YEAR/PLUSIEURS ANNEES
24 HR FORECAST ICE DRIFT OF FREELY MOVING ICE
DERIVE PREVUE DES GLACES EN MOUVEMENTS LIBRES SUR 24 HR
DIRECTION
NM/
ICE ANALYSIS
ANALYSE DES GLACES
1800 UCT 5 APR 1990
BASED ON REPORTS
BASEE SUR RAPPORTS
RECON 04 APR/AVR
SATELLITE 04 APR/AVR
SHIPS/NAVIRES 05 APR/AVR
SHORE/COTIER 05 APR/AVR
LC/JC
A
B
C
D
E
7
8
9+
6
4
2
1
5
N9
ARGENTIA
ESTIMATED
ICEBERG LIMIT FROM/DE LA COTE DE TERRE NEUVE
FROM NFLD COAST TO/A

Ice conditions for April 10, 1990


CODE
FLOE
1 0-10
3 SMALL/PETIT
4 10-15
4 MEDIUM/MOYEN
70-120
120+
8 FAST ICE
SECOND YEAR
MULTI YEAR
24 HR FORECAST ICE DRIFT
OF FREELY MOVING ICE
DERIVE PREVUE DES GLACES
EN MOUVEMENTS LIBRES SUR 24 HR
DIRECTION
ICE ANALYSIS
ANALYSE DES GLACES
1800 UCT 10 APR 1990
BASED ON
REPORTS
SATELLITE 10 AVRIL 1990
SHIPS/NAVIRES 10 APRIL 1990
SHORE/COTIER 10 AVRIL 1990
A

Ice conditions for April 15, 1990


CONCENTRATION (1–10)
SECOND YEAR
MULTI YEAR
24 HR FORECAST ICE DRIFT
OF FREELY MOVING ICE
DERIVE PREVUE DES GLACES
EN MOUVEMENTS LIBRES SUR 24 HR
DIRECTION
ICE ANALYSIS
ANALYSE DES GLACES
1800 UCT 15 APR 1990
BASED ON
REPORTS
BASEE SUR
RAPPORTS
RECON 13 APR/AVR
SATELLITE 13 APR/AVR
SHIPS/NAVIRES 15 APR/AVR
SHORE/COTIER 11 APR/AVR
A.P.
10
07
A
B
C
D
E
F
G
H
J

3. Temperature and salinity distribution

3.1 Locations of CTD stations

Two types of temperature-salinity data were collected: data taken at oceanographic stations with a CTD (Guildline Mark IV), and data collected by a Batfish, a depth-cycling tow body equipped with a CTD probe (Guildline). The Batfish data will be shown in Section 4 starting on p. 73.

The CTD data were collected either on board the ship or on ice through a bore hole using a portable CTD system. One hundred and nineteen CTD profiles were obtained. The locations of the CTD stations are given in p. 12 to p. 15. The location map is shown in p. 16. Batfish tow 5, whose data were used in the horizontal distribution map, is also shown. The dots on the Batfish track represent one-hour intervals of ship's movement. The ice limits for March 26 and April 10 are indicated by the heavy and dashed curves respectively.

The CTD data were processed using the standard procedures of the Bedford Institute. The final data were decimated to 1 m approximately.

3.2 Vertical profiles of temperature, salinity and σ_T

The vertical profiles of temperature, salinity, and σ_T for each station are shown in p. 17 to p. 47. Stations 42 to 64 were drift stations (ship freely drifting) with a time interval of approximately two hours. Multiple vertical profiles of temperature, salinity and σ_T from these stations are shown in p. 48. The scales on the x-axis are valid for the first profiles only, each succeeding profile is displaced to the right by 2°C, 1 and 1 for temperature, salinity, and σ_T respectively. All the profiles except those from station 46 are plotted using the data of down traces.

3.3 Horizontal distribution of T, S, and σ_T

The horizontal distribution of temperature, salinity, σ_T and geopotential (relative to the surface) at depths 20 m, 40 m, 100 m, and 200 m are shown in p. 49 to p. 64.

3.4 Vertical sections

The vertical distribution of temperature, salinity, and σ_T for sections A to G are displayed in p. 65 to p. 71. The open squares denote data limits.

CRUISE 89041 CTD STATIONS

STN	CAL. DAY	JD	TIME (UTC)	LATITUDE (Degree)	LONGITUDE (Degree)	WATER DEPTH (M)
1	26/ 3/1990	85	5:02	47.5460	50.6072	108
2	26/ 3/1990	85	6:25	47.4892	50.6190	113
3	26/ 3/1990	85	7:31	47.4465	50.6203	108
4	26/ 3/1990	85	8:27	47.4007	50.6180	102
5	26/ 3/1990	85	9:26	47.3327	50.6197	106
6	26/ 3/1990	85	10:14	47.2690	50.6195	106
7	26/ 3/1990	85	23:01	47.2073	50.3602	115
8	27/ 3/1990	86	0:22	47.2308	50.4823	100
9	27/ 3/1990	86	1:31	47.2502	50.6123	104
10	27/ 3/1990	86	2:34	47.2702	50.7390	106
11	27/ 3/1990	86	3:36	47.2898	50.8730	126
12	27/ 3/1990	86	5:02	47.3083	51.0000	124
13	27/ 3/1990	86	6:35	47.3327	51.1297	133
14	27/ 3/1990	86	7:35	47.3488	51.2560	136
15	27/ 3/1990	86	8:42	47.3708	51.3808	126
16	28/ 3/1990	87	2:40	46.4987	49.9990	78
17	28/ 3/1990	87	3:37	46.5662	49.9085	78
18	28/ 3/1990	87	4:54	46.6343	49.8110	73
19	28/ 3/1990	87	5:59	46.7163	49.7188	75
20	28/ 3/1990	87	6:58	46.7628	49.6247	74
21	28/ 3/1990	87	8:07	46.8245	49.5240	75
22	28/ 3/1990	87	9:10	46.8930	49.4343	77
23	28/ 3/1990	87	10:08	46.9608	49.3372	79
24	28/ 3/1990	87	11:23	47.0275	49.2358	82
25	28/ 3/1990	87	12:20	47.0885	49.1435	87
26	28/ 3/1990	87	13:15	47.1503	49.0570	91
27	28/ 3/1990	87	15:00	47.2208	48.9543	113
28	28/ 3/1990	87	16:33	47.2807	48.8753	128
29	30/ 3/1990	89	0:26	49.0008	47.5007	2486
30	30/ 3/1990	89	2:54	48.8995	47.8338	2356
31	30/ 3/1990	89	5:23	48.7960	48.1493	2180
32	30/ 3/1990	89	8:32	48.7050	48.3900	1920
33	30/ 3/1990	89	10:20	48.6487	48.5642	1871
34	30/ 3/1990	89	12:56	48.5867	48.7290	1719
35	30/ 3/1990	89	15:31	48.5075	48.7638	1550
36	31/ 3/1990	90	4:26	49.5002	47.9862	2419
37	31/ 3/1990	90	6:44	49.5010	48.2468	2303
38	31/ 3/1990	90	8:49	49.4997	48.4955	2157
39	31/ 3/1990	90	10:54	49.4982	48.7547	1995
40	31/ 3/1990	90	12:53	49.4997	49.0000	1000
41	31/ 3/1990	90	14:48	49.4953	49.1572	904
42	1/ 4/1990	91	22:03	49.8637	49.9758	756
43	2/ 4/1990	92	0:05	49.8485	49.9825	740
44	2/ 4/1990	92	2:02	49.8418	49.9850	732
45	2/ 4/1990	92	4:00	49.8380	49.9795	732
46	2/ 4/1990	92	6:02	49.8283	49.9730	732
47	2/ 4/1990	92	8:01	49.8098	49.9790	704
48	2/ 4/1990	92	10:06	49.7963	49.9803	700

49	2/ 4/1990	92	11:58	49.7897	49.9815	700
50	2/ 4/1990	92	14:03	49.7750	49.9967	695
51	2/ 4/1990	92	16:06	49.7667	49.9925	695
52	2/ 4/1990	92	18:01	49.7530	49.9982	680
53	2/ 4/1990	92	20:03	49.7393	50.0075	642
54	2/ 4/1990	92	22:03	49.7268	50.0067	637
55	3/ 4/1990	93	0:02	49.7083	50.0257	608
56	3/ 4/1990	93	2:03	49.6880	50.0430	570
57	3/ 4/1990	93	4:06	49.6625	50.0668	519
58	3/ 4/1990	93	5:58	49.6397	50.0885	483
59	3/ 4/1990	93	8:13	49.6385	50.0607	545
60	3/ 4/1990	93	10:07	49.6457	50.0387	590
61	3/ 4/1990	93	12:10	49.6298	50.0600	540
62	3/ 4/1990	93	16:24	49.6120	50.0410	654
63	3/ 4/1990	93	18:09	49.6042	50.0412	583
64	3/ 4/1990	93	20:08	49.5945	50.0468	572
65	4/ 4/1990	94	0:01	49.5662	50.2500	329
66	4/ 4/1990	94	1:58	49.5505	50.1823	340
67	4/ 4/1990	94	12:25	49.5648	50.0532	549
68	4/ 4/1990	94	15:19	49.5687	49.9500	695
69	4/ 4/1990	94	17:21	49.5685	49.8485	841
70	4/ 4/1990	94	19:12	49.5682	49.7503	961
71	4/ 4/1990	94	21:28	49.5658	49.5820	1175
72	4/ 4/1990	94	23:11	49.5675	49.4142	1375
73	5/ 4/1990	95	1:00	49.5670	49.2488	1565
74	5/ 4/1990	95	2:29	49.5670	49.0855	1726
75	5/ 4/1990	95	4:06	49.5650	48.9125	1884
76	5/ 4/1990	95	5:48	49.5673	48.7502	2012
77	5/ 4/1990	95	7:19	49.5675	48.5838	2100
78	5/ 4/1990	95	8:39	49.5668	48.4350	2216
79	5/ 4/1990	95	10:14	49.5663	48.2518	2304
80	5/ 4/1990	95	11:45	49.5665	48.0817	924
81	5/ 4/1990	95	13:01	49.5158	48.0838	905
82	6/ 4/1990	96	12:53	49.2148	48.8347	1960
83	6/ 4/1990	96	14:05	49.2167	48.9175	1902
84	6/ 4/1990	96	15:53	49.2155	49.0832	1774
85	6/ 4/1990	96	18:59	49.3088	49.0982	1725
86	7/ 4/1990	97	1:26	48.4975	48.4935	1711
87	7/ 4/1990	97	5:44	48.1648	47.9937	1316
88	7/ 4/1990	97	8:24	48.1673	47.6658	1162
89	7/ 4/1990	97	10:39	48.1663	47.3410	1134
90	7/ 4/1990	97	13:42	48.1663	46.9973	933
91	7/ 4/1990	97	15:45	48.1665	46.6633	810
92	7/ 4/1990	97	17:38	48.1670	46.4992	1044
93	7/ 4/1990	97	22:21	47.5680	46.3300	1074
94	8/ 4/1990	98	0:38	47.5672	46.6662	1156
95	8/ 4/1990	98	3:25	47.5667	47.0015	861
96	8/ 4/1990	98	6:06	47.5677	47.3385	300
97	8/ 4/1990	98	8:33	47.5693	47.6680	271
98	8/ 4/1990	98	11:11	47.5675	47.9990	230
99	8/ 4/1990	98	14:31	47.5688	48.5000	175
100	8/ 4/1990	98	19:02	47.5737	48.9943	148

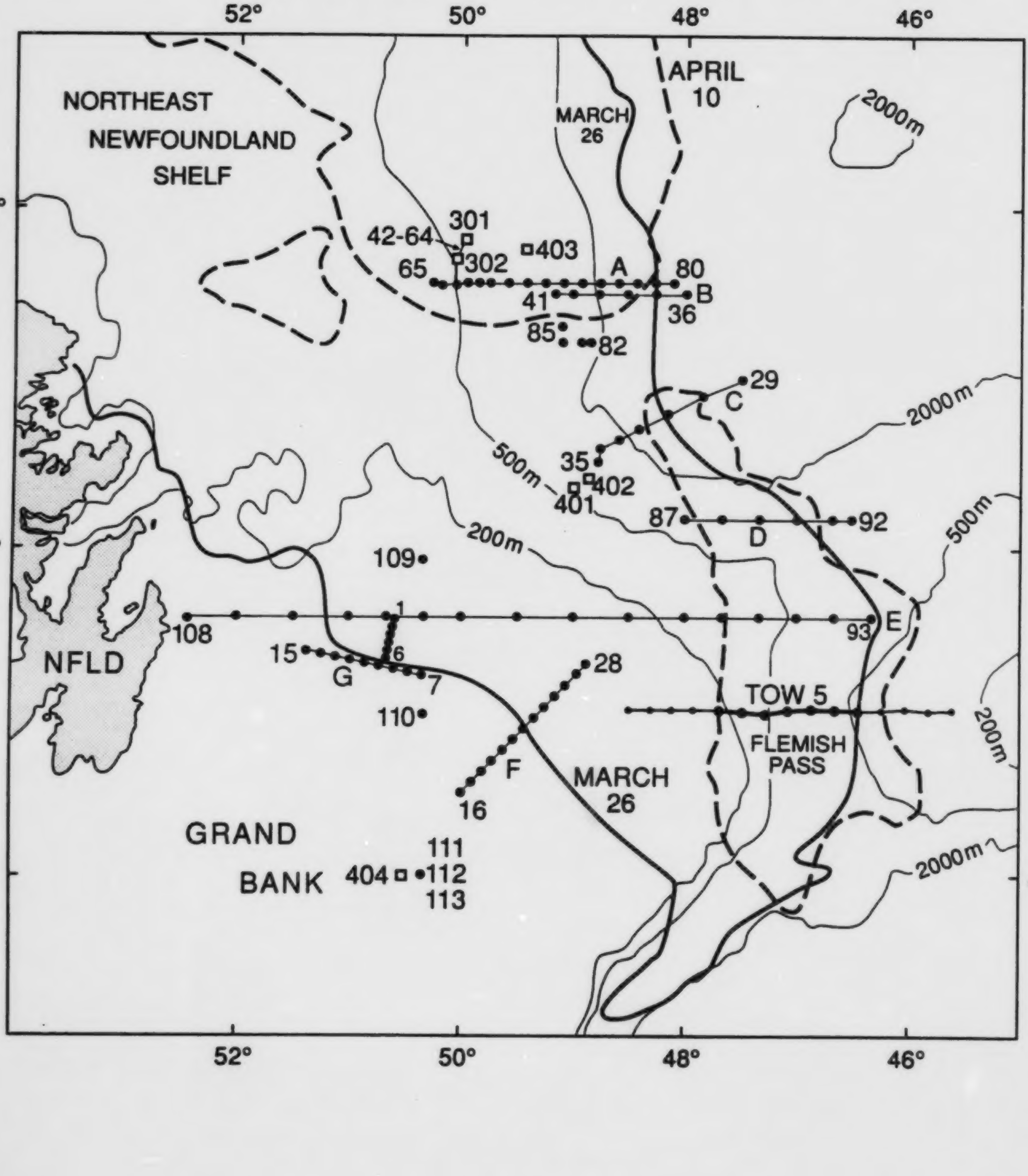
101	8/ 4/1990	98	23:01	47.5740	49.5008	109
102	9/ 4/1990	99	2:12	47.5678	50.0005	90
103	9/ 4/1990	99	4:14	47.5685	50.3348	120
104	9/ 4/1990	99	6:36	47.5677	50.6657	218
105	9/ 4/1990	99	8:37	47.5693	51.0005	148
106	9/ 4/1990	99	11:10	47.5665	51.5015	130
107	9/ 4/1990	99	13:43	47.5663	52.0008	170
108	9/ 4/1990	99	17:35	47.5677	52.4308	163
109	10/ 4/1990	100	2:34	47.9190	50.3492	187
110	10/ 4/1990	100	11:00	46.9797	50.3438	108
111	12/ 4/1990	102	11:07	45.9943	50.3467	82
112	12/ 4/1990	102	11:50	46.0000	50.3377	82
113	12/ 4/1990	102	13:03	46.0070	50.3218	82

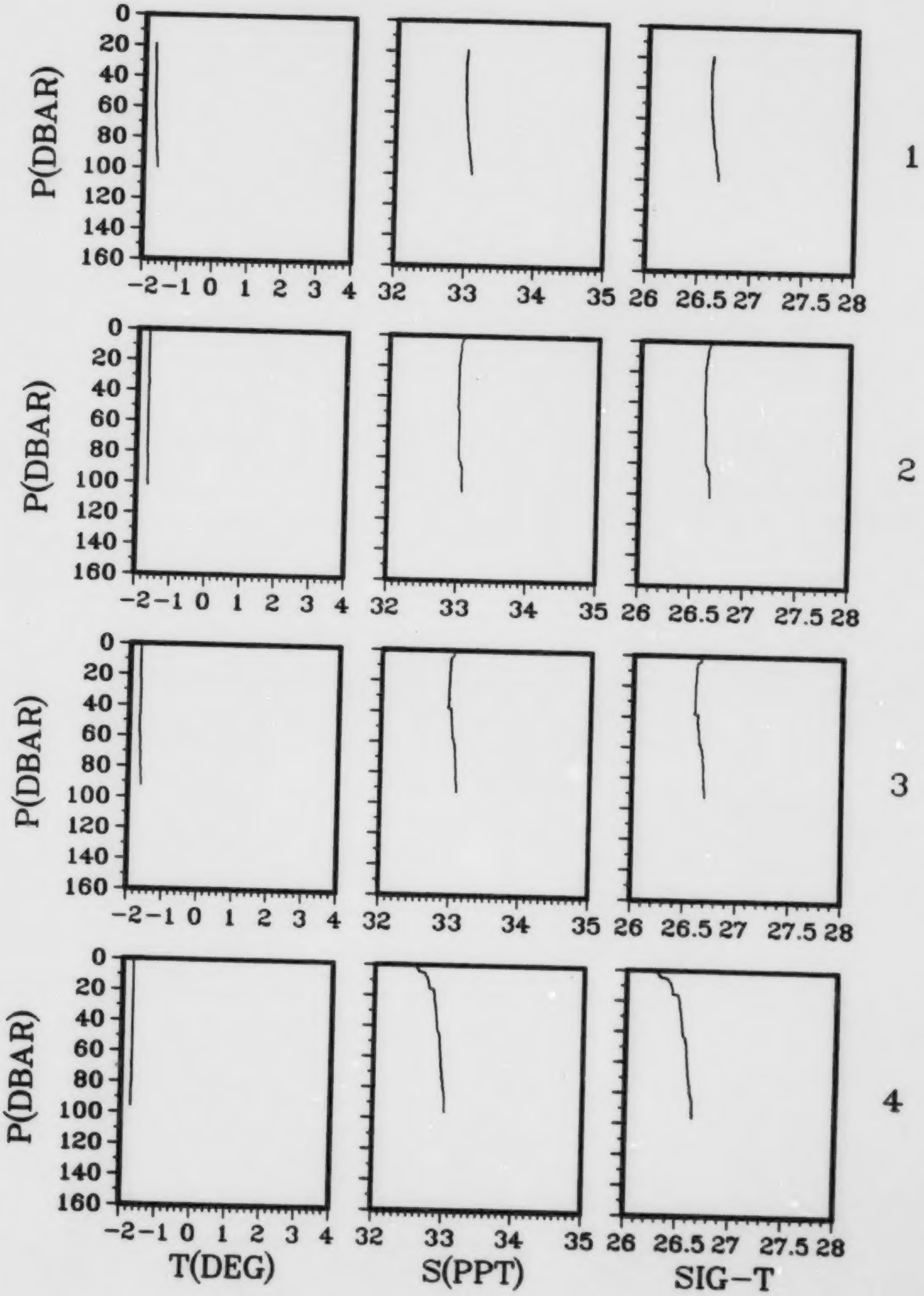
CRUISE 89041 CTD STATIONS
(PORTABLE SYSTEM)

STN	CAL. DAY	JD	TIME (UTC)	LATITUDE (Degree)	LONGITUDE (Degree)	WATER DEPTH(APPR.) (M)
301	01/04/1990	91	18:20	49.8498	49.9853	740
302	02/04/1990	92	13:28	49.7167	50.0173	608
401	30/03/1990	89	23:53	48.3407	49.0433	785
402	30/03/1990	89	19:46	48.3878	48.8272	1350
403	02/04/1990	92	17:02	49.8017	49.2553	1580
404	12/04/1990	102	14:31	46.0020	50.5088	82

Note: 301, 302, 401, 402, 403 on ice
404 in water (calibration cast)

LOCATION OF CTD STATIONS


52°
50°
48°
46°
NORTHEAST NEWFOUNDLAND SHELF
MARCH 26
APRIL 10
2000m
301
42-64
403
302
65
A
80
41
B
36
85
82
29
C
2000m
500m
35
402
401
87
D
92
500m
200m
109
1
108
E
93
15
6
NFLD
G
7
28
110
TOW 5
FLEMISH PASS
200m
F
MARCH 26
16
GRAND BANK
111
404
112
113
2000m
50°
48°
46°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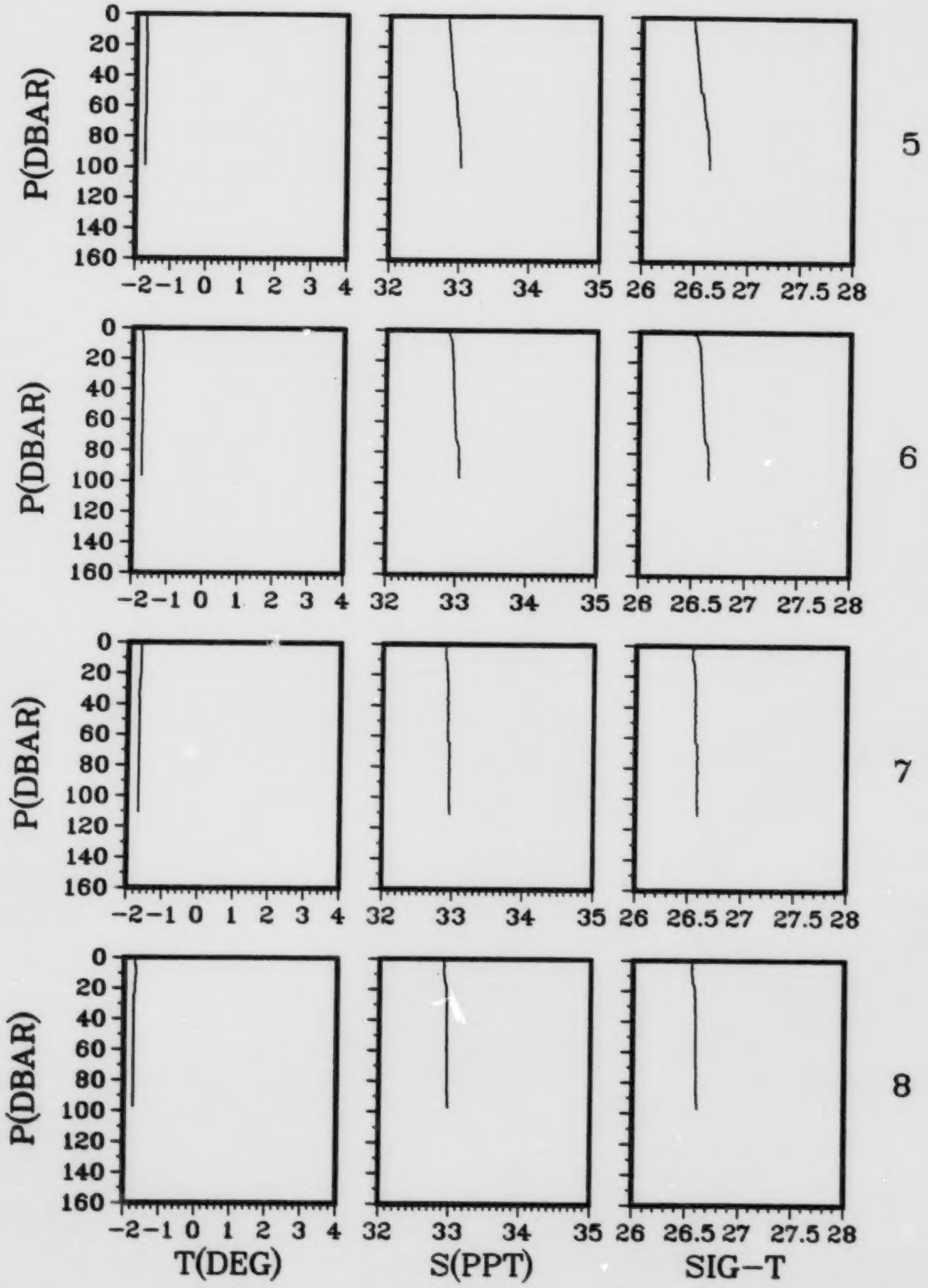
T(DEG)
S(PPT)
SIG-T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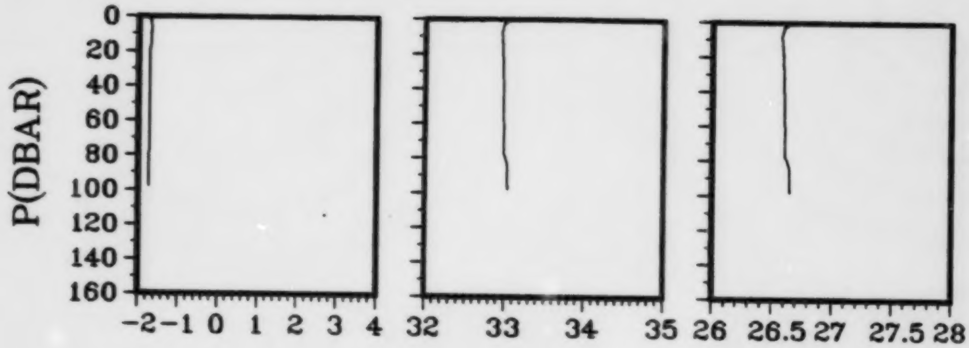
S(PPT)
SIG-T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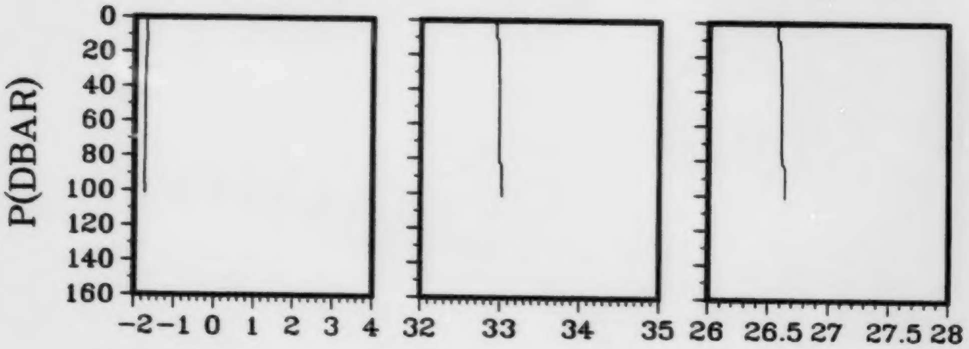
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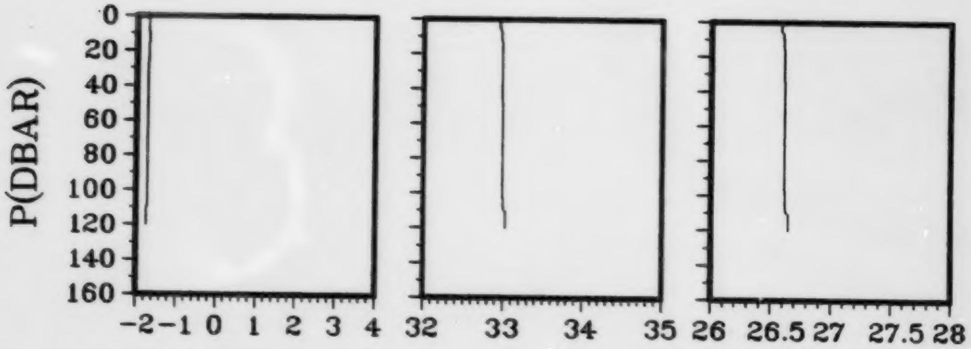
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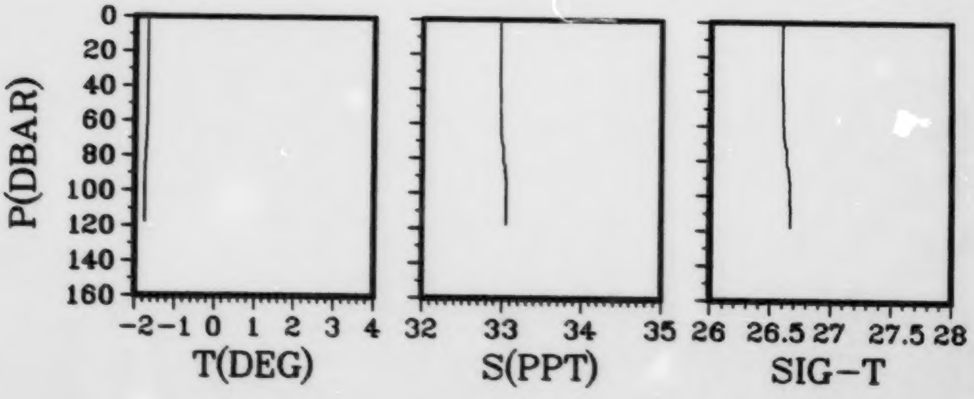
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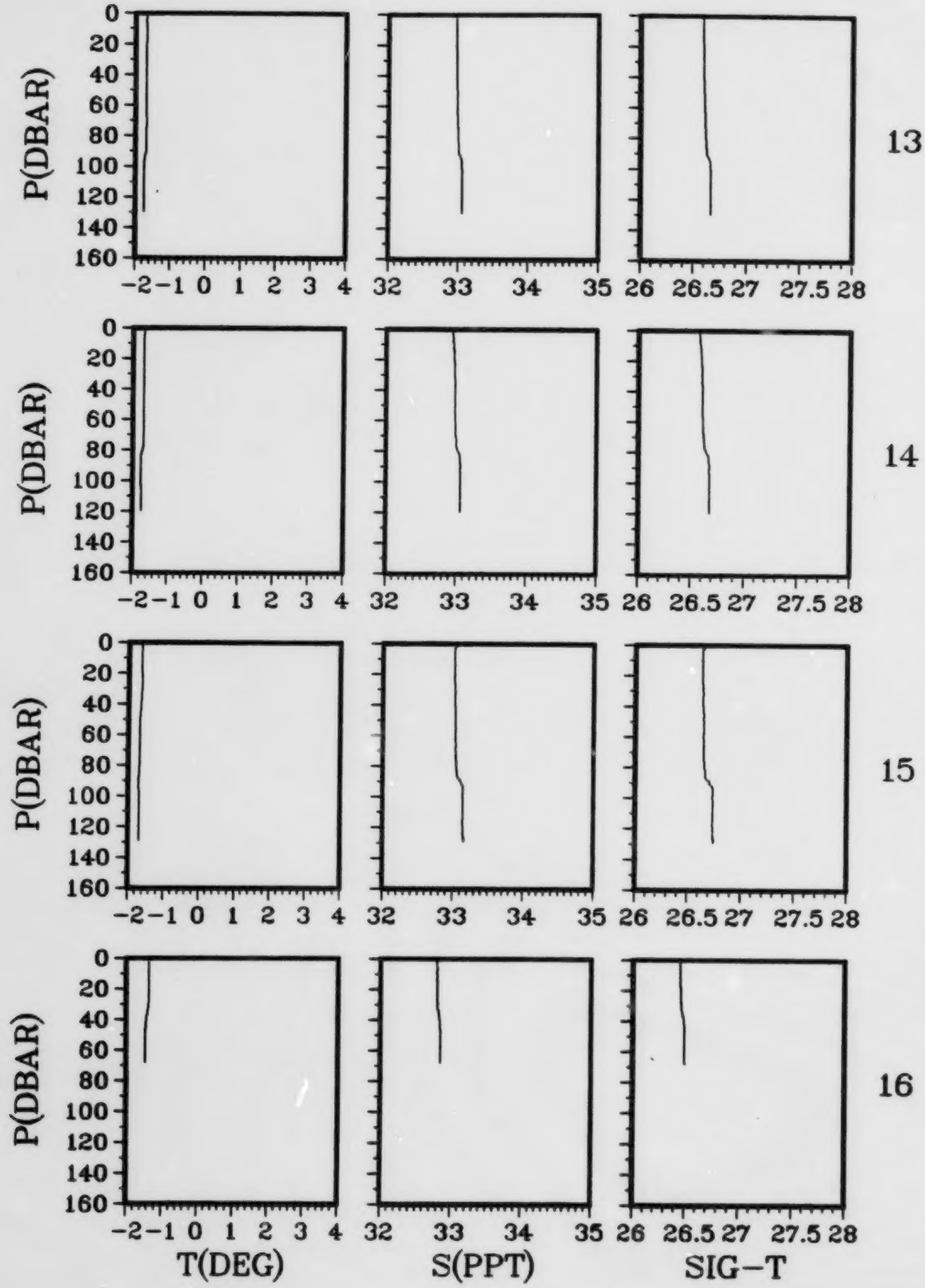
T(DEG)
S(PPT)
SIG−T

12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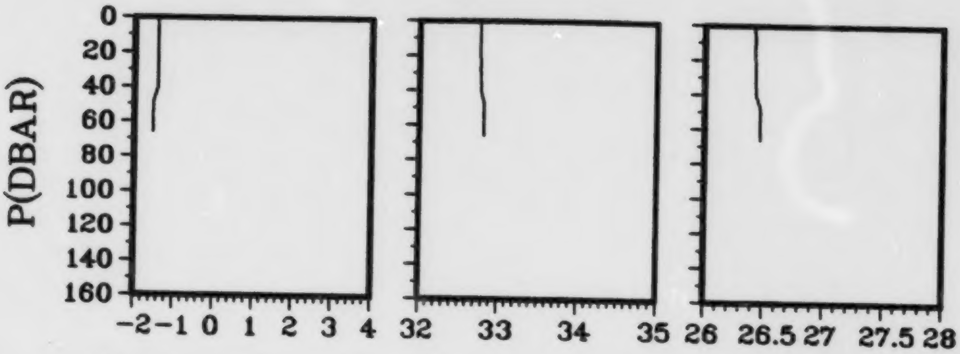
S(PPT)
SIG-T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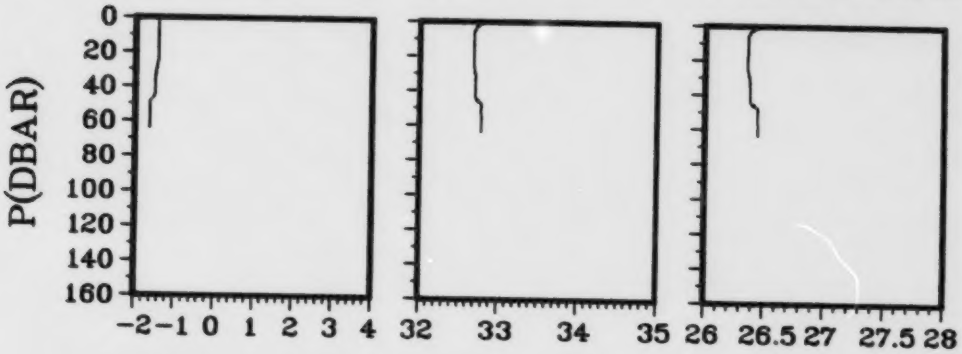
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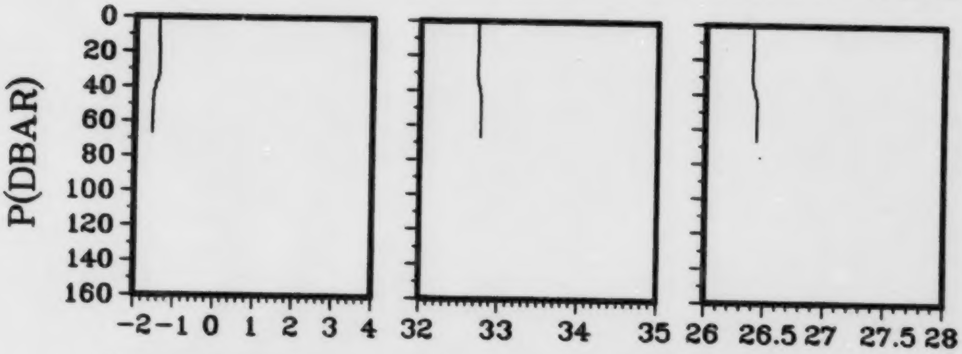
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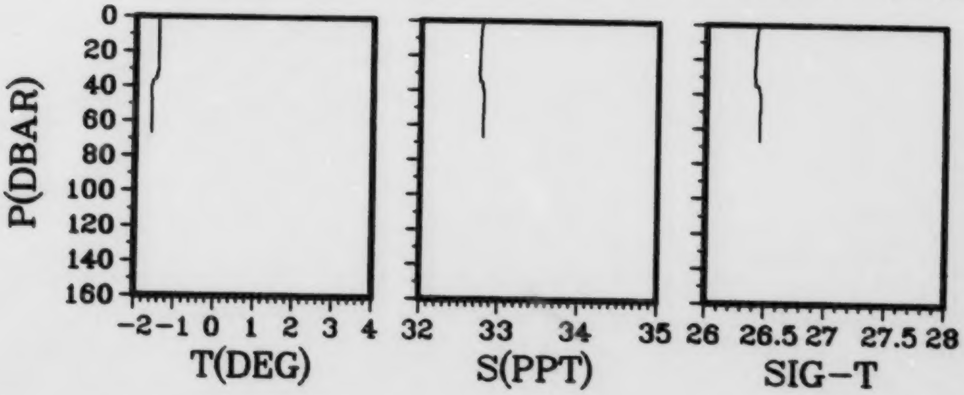
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T(DEG)
S(PPT)
SIG−T

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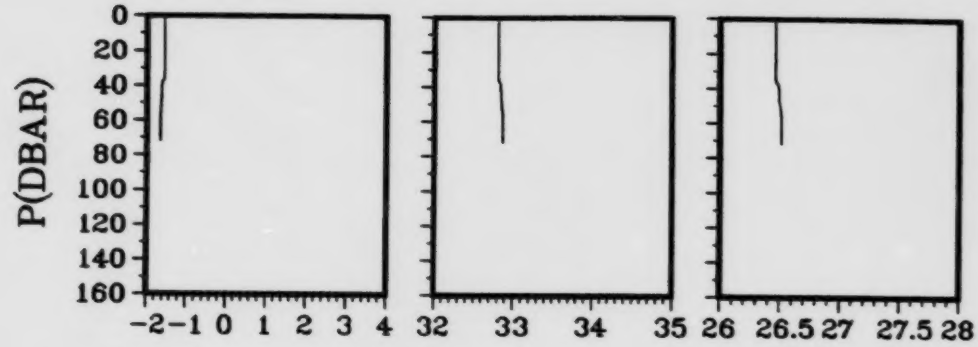
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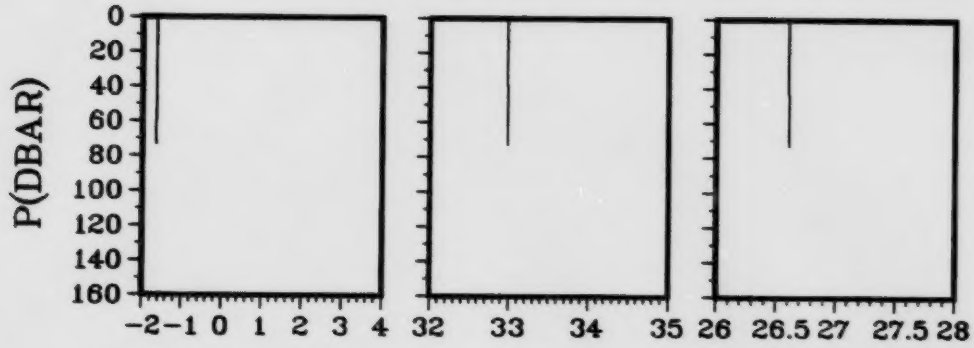
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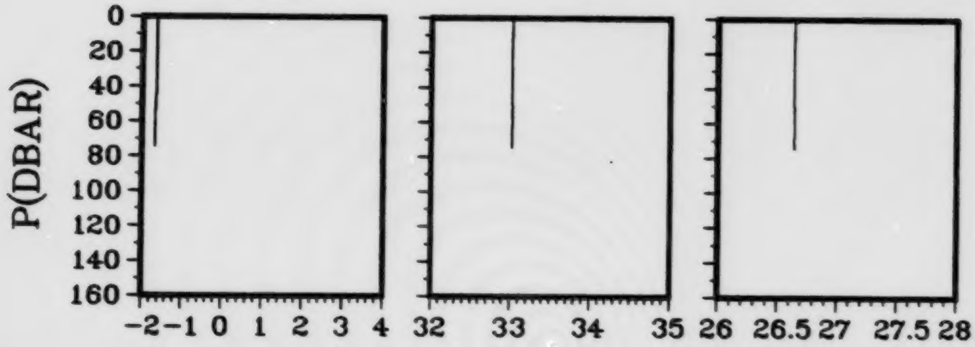
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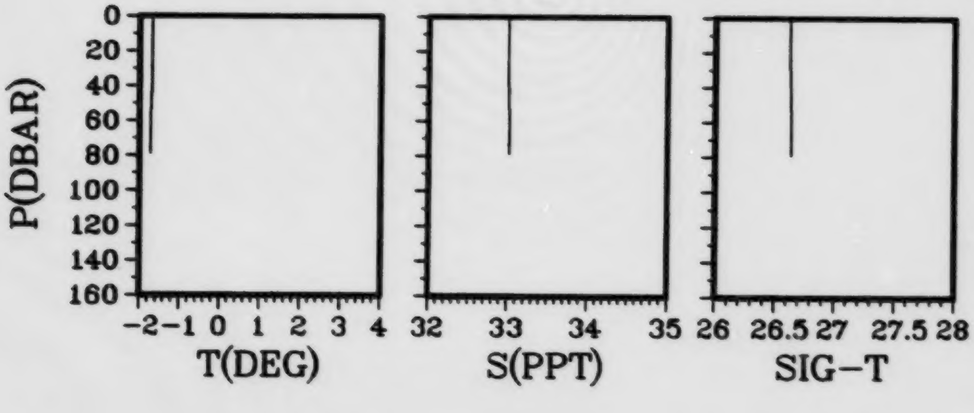
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SIG−T

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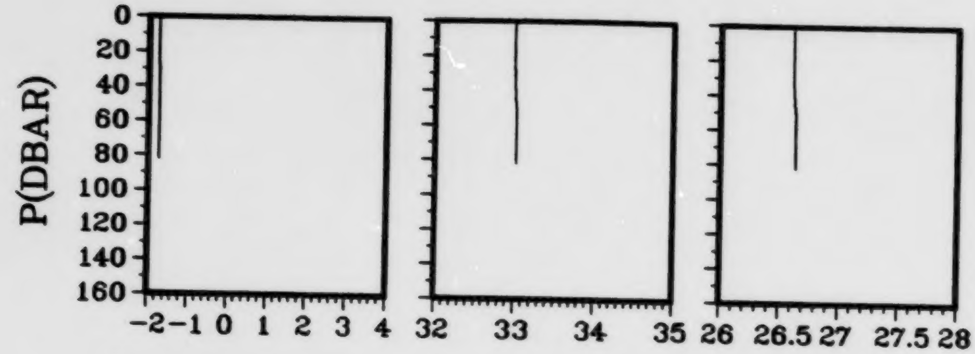
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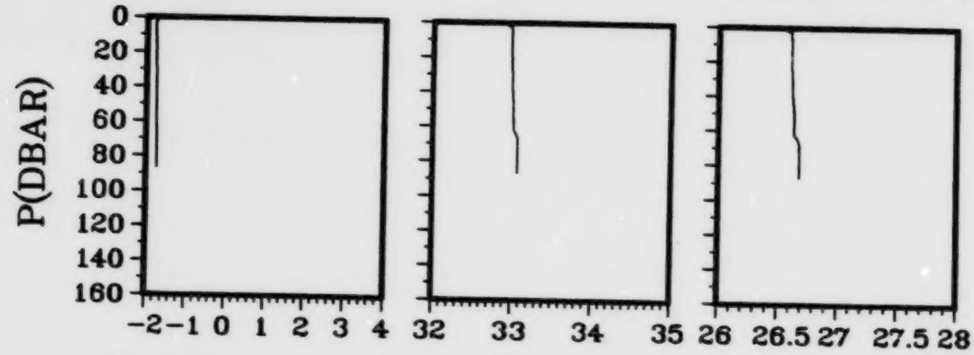
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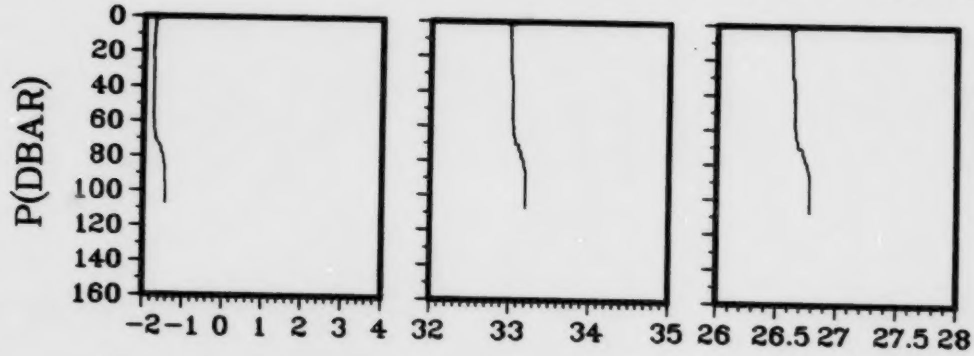
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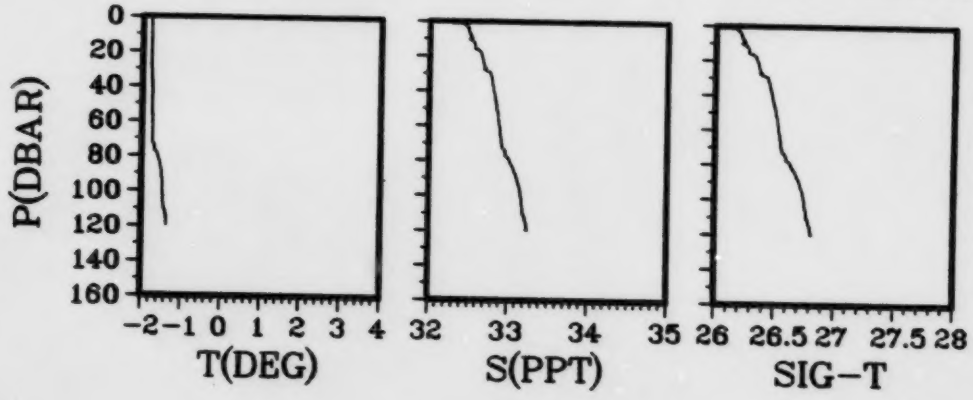
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S(PPT)
SIG−T

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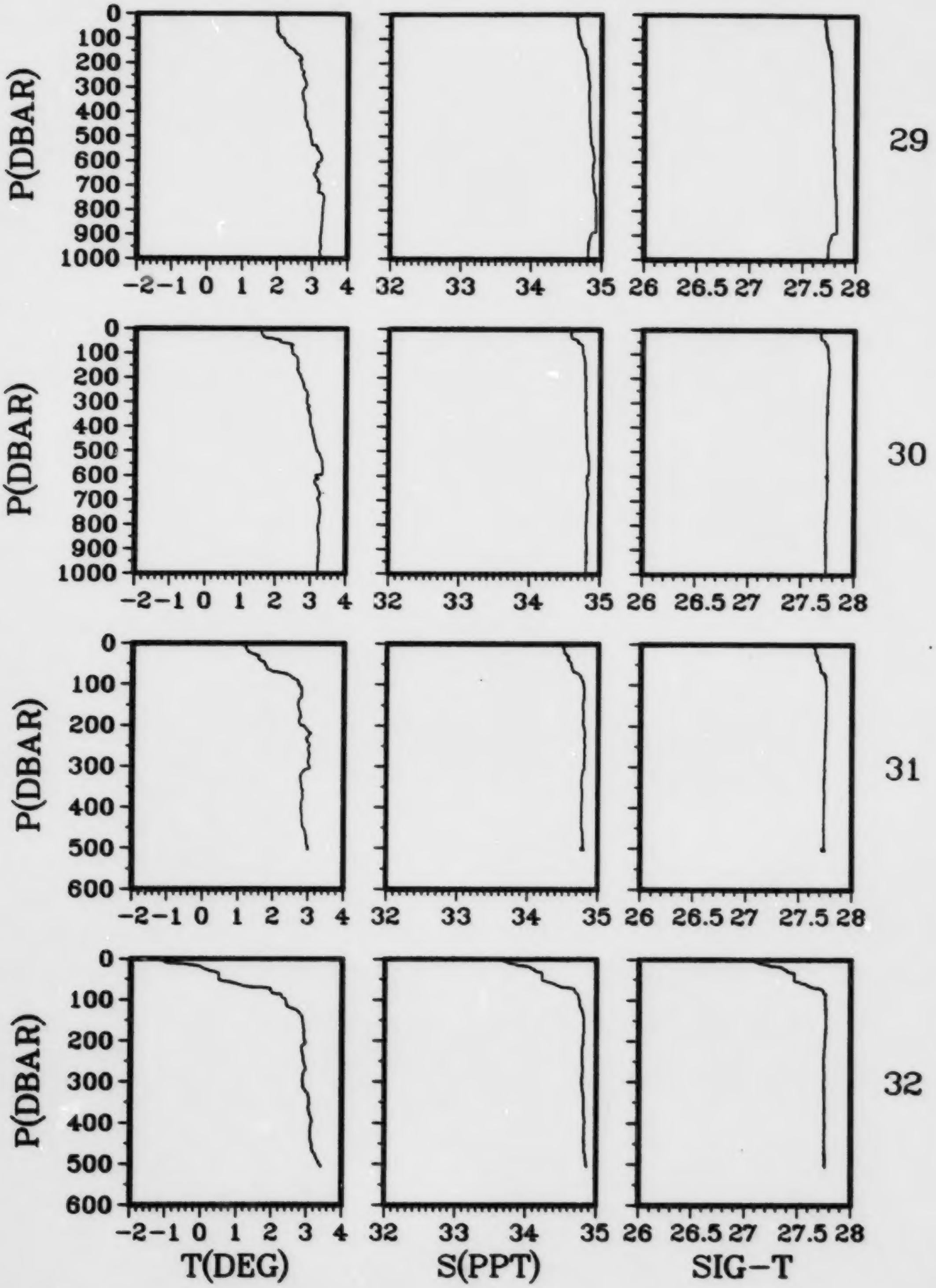
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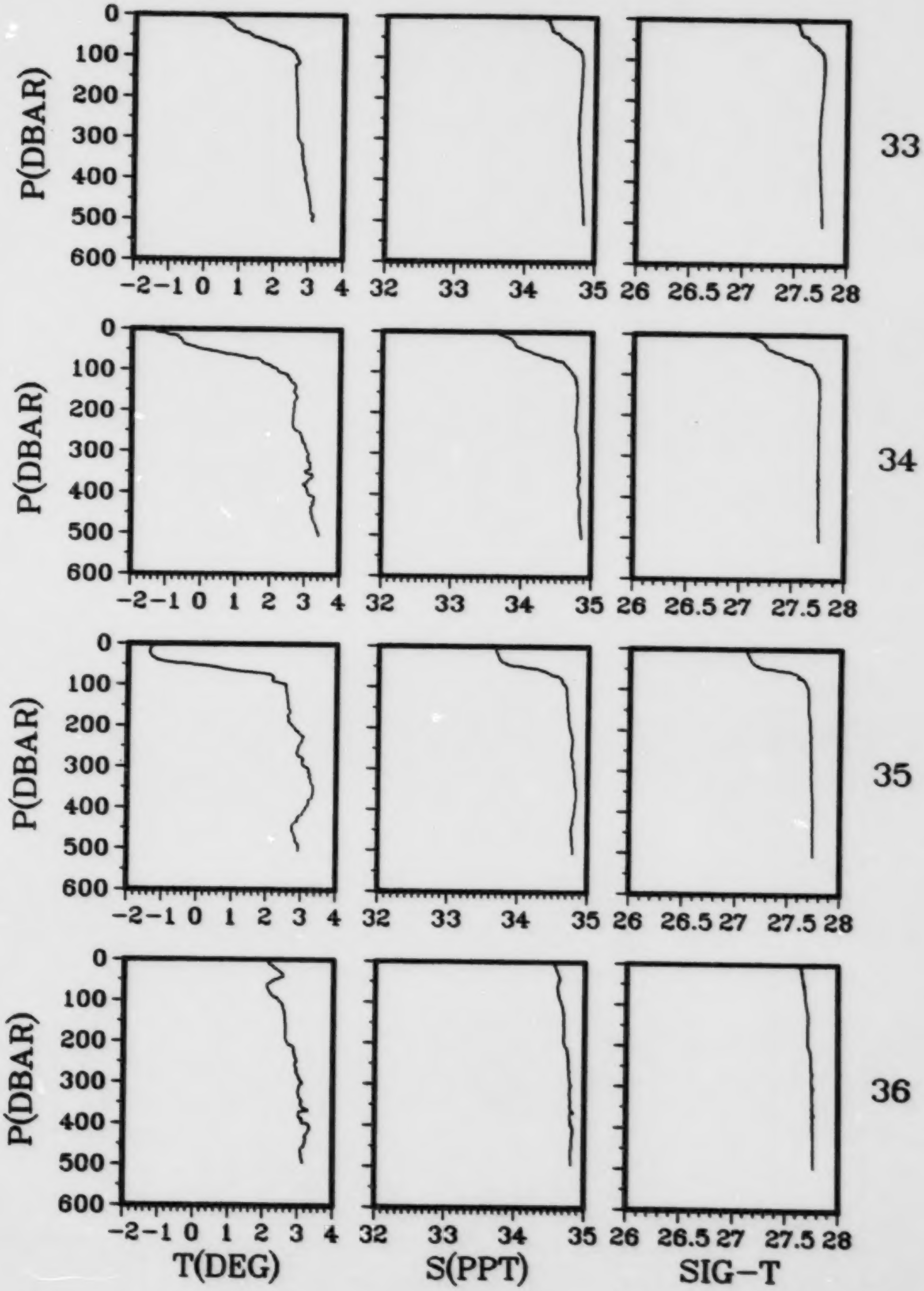
S(PPT)
SIG-T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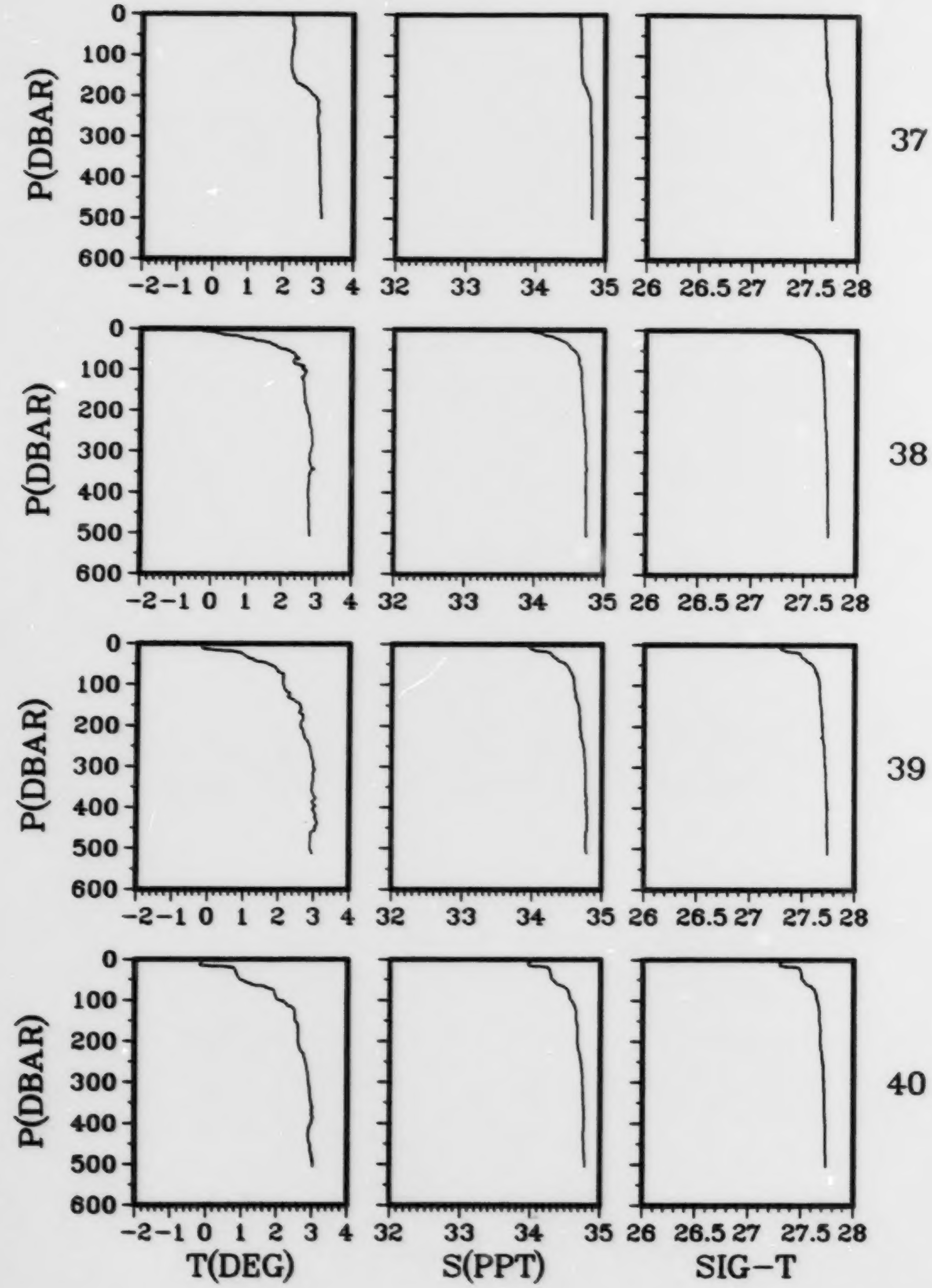
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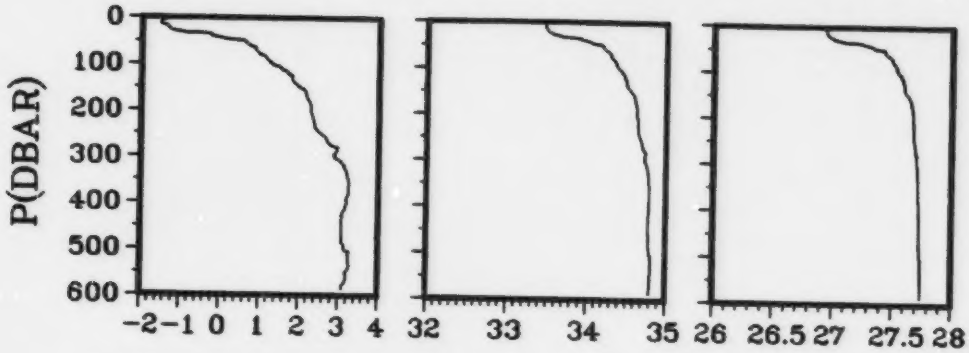
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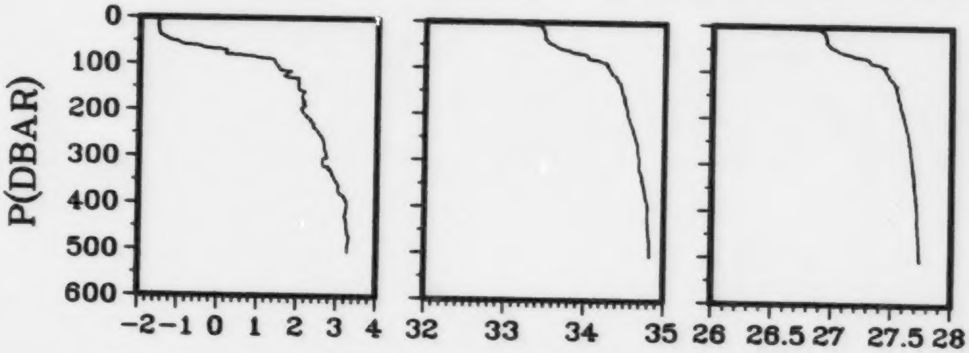
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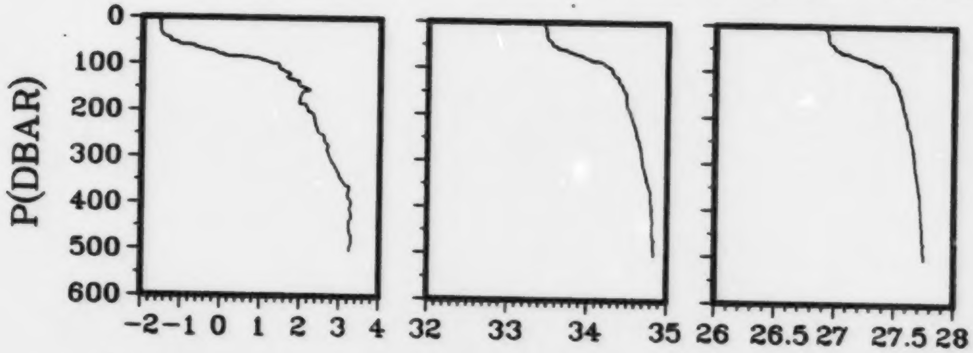
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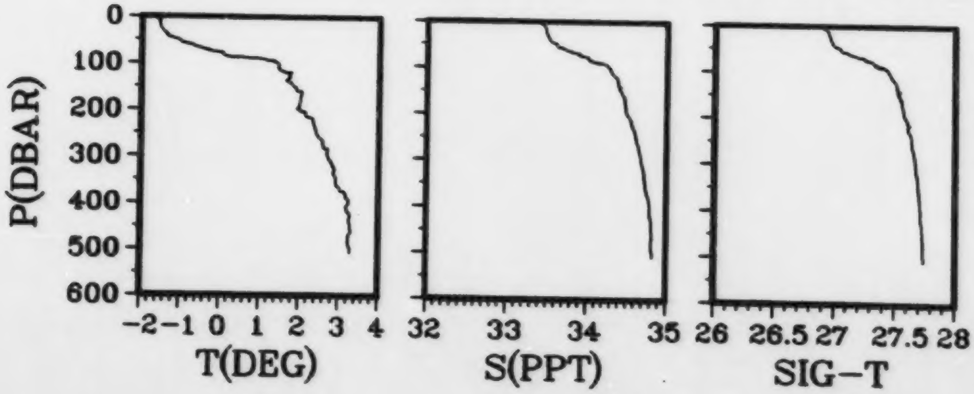
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SIG-T

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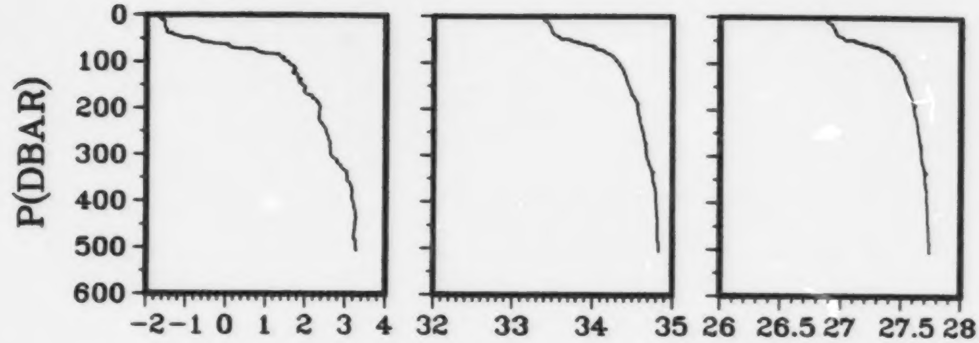
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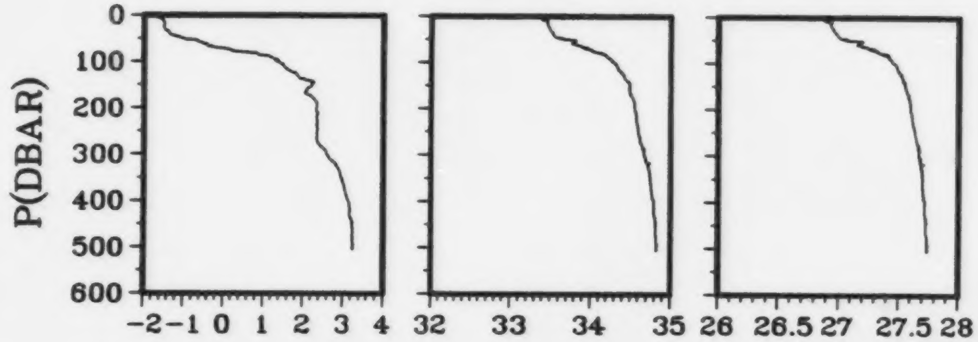
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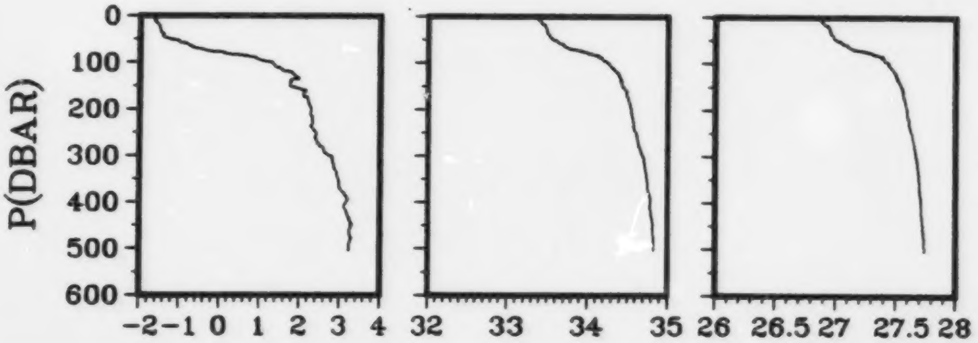
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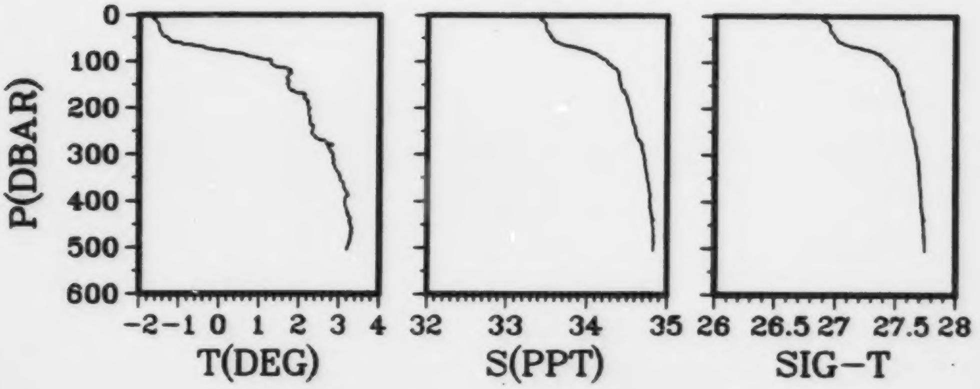
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S(PPT)
SIG-T

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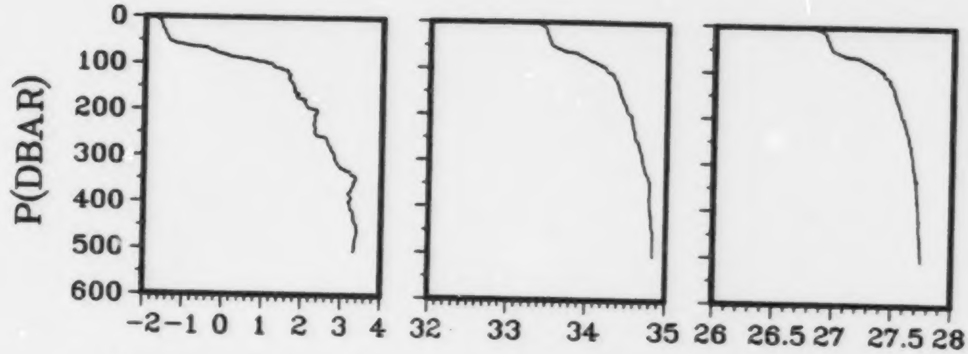
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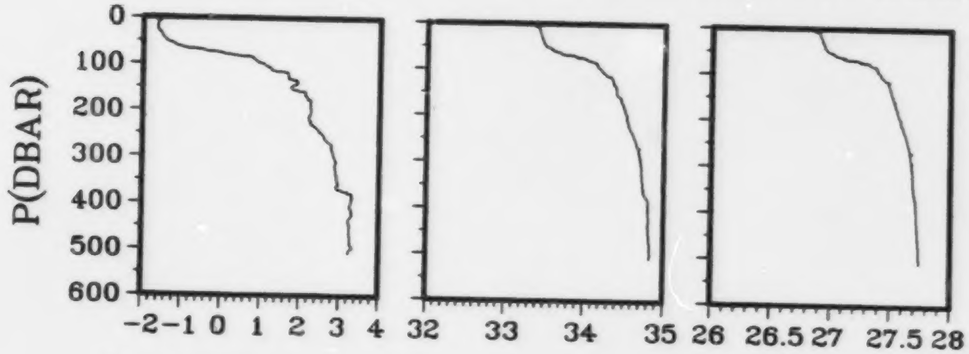
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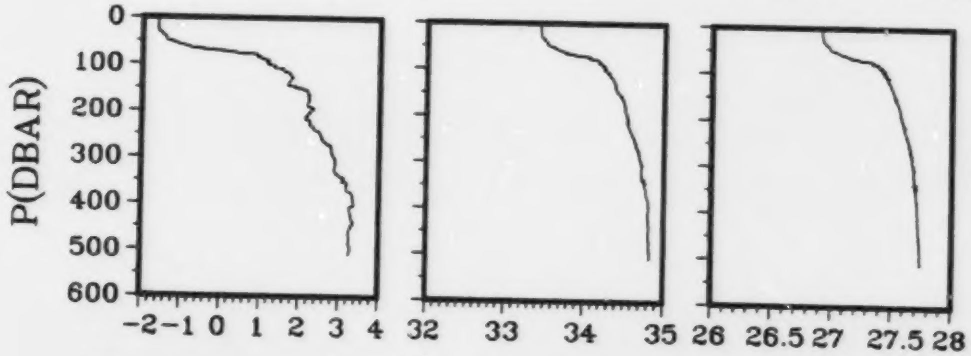
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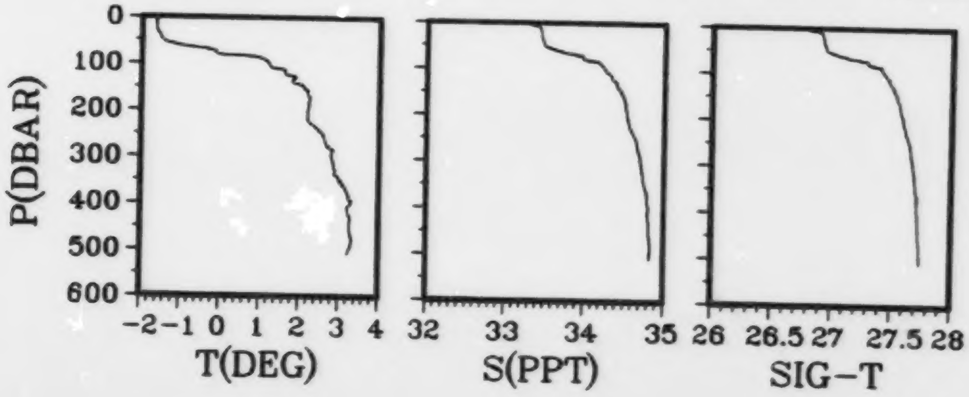
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S(PPT)
SIG-T

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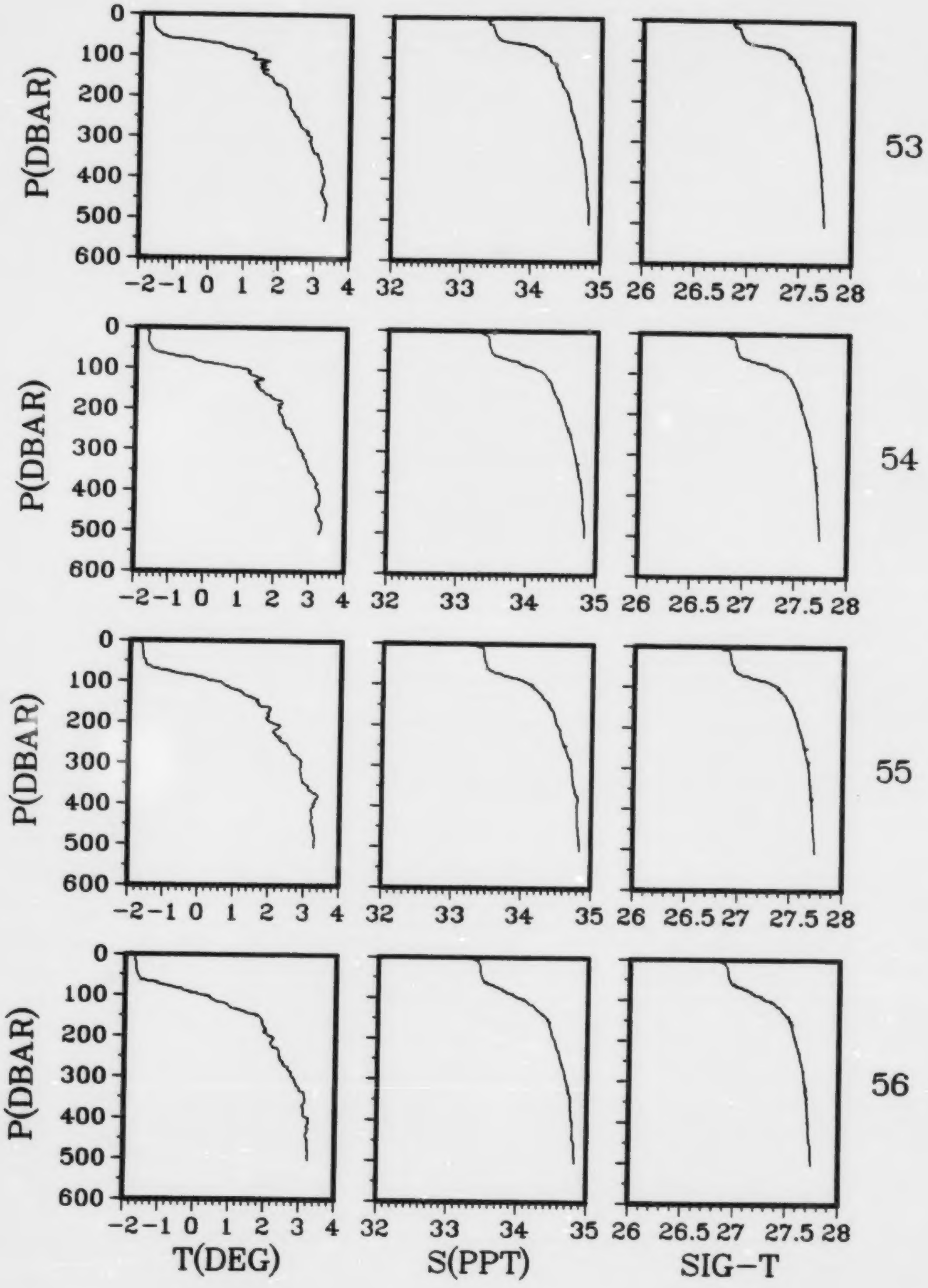
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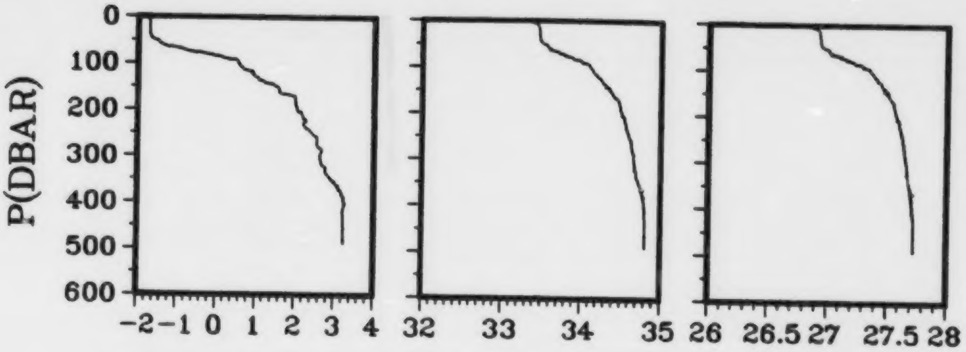
S(PPT)
SIG−T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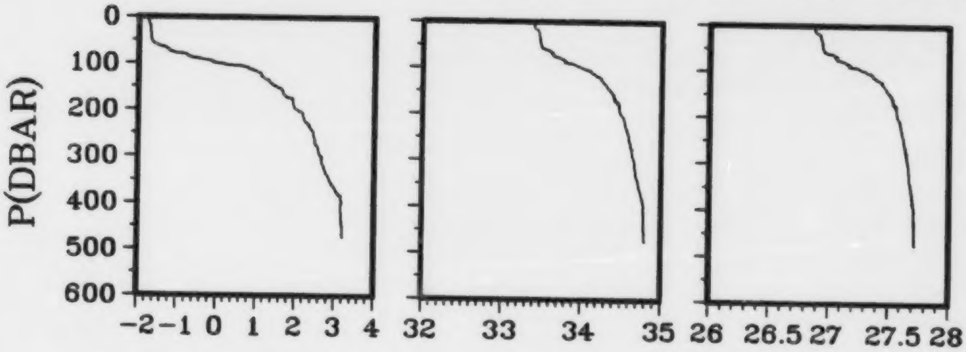
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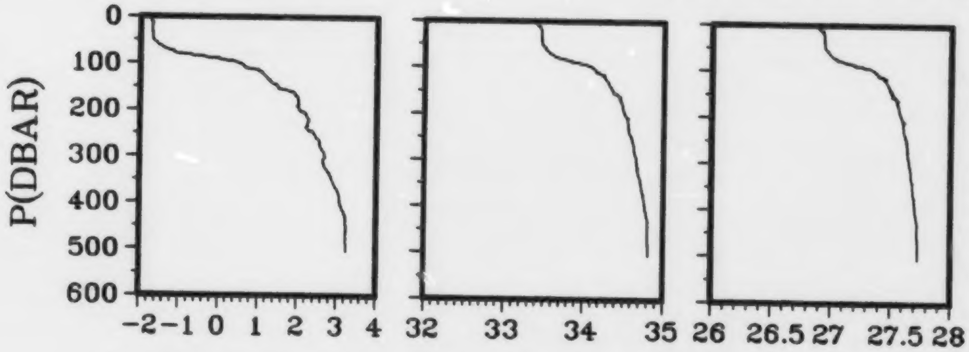
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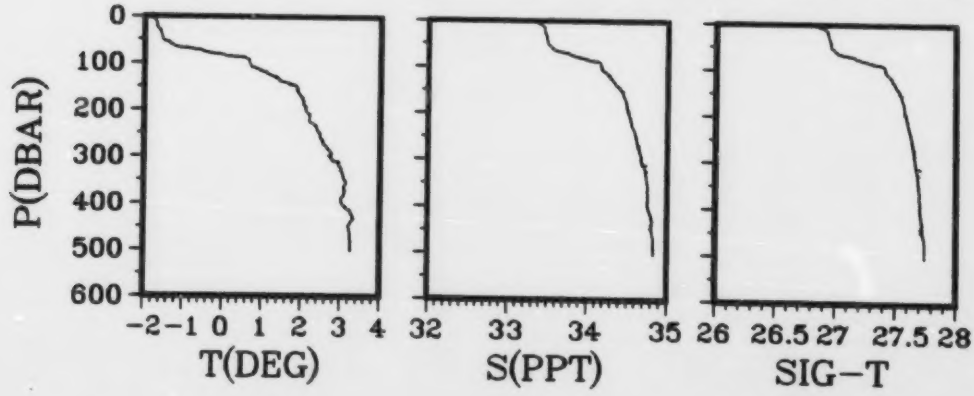
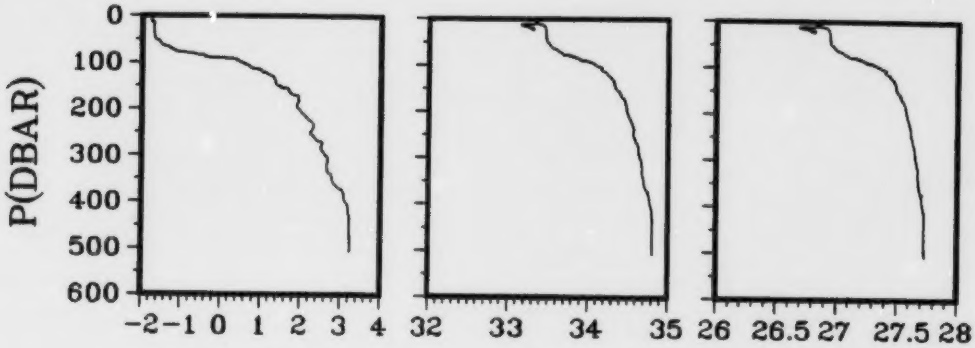
27.5
28

59


P(DBAR)
0
100
200
300
400
500
600
−2
−1
0
1
2
3
4
32
33
34
35
26
26.5
27
27.5
28
T(DEG)
S(PPT)
SIG−T

60


P(DBAR)
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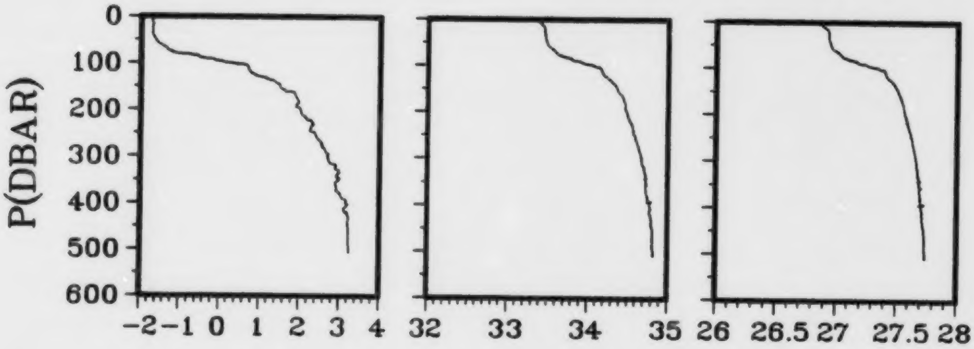
300
400
500
600
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

61


P(DBAR)
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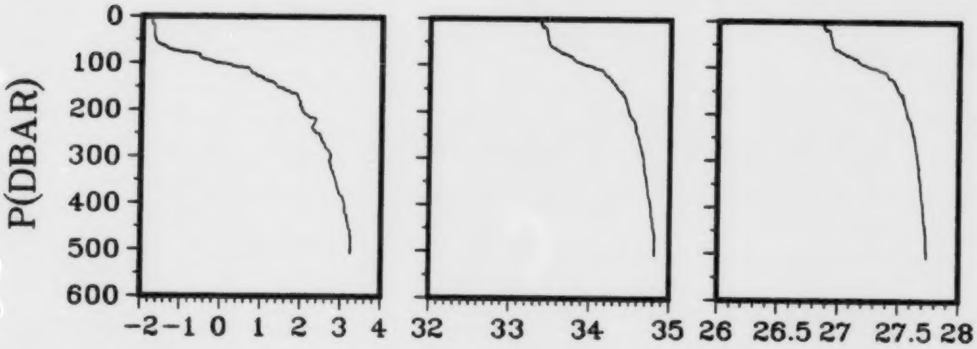
500
600
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

62


P(DBAR)
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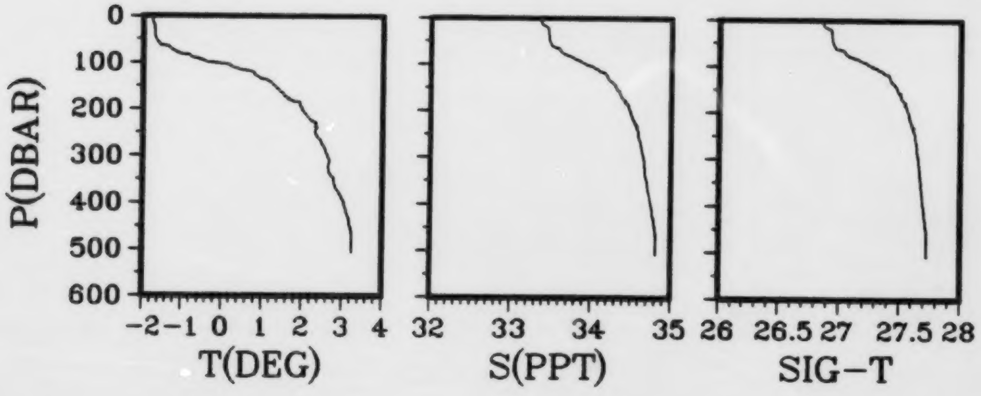
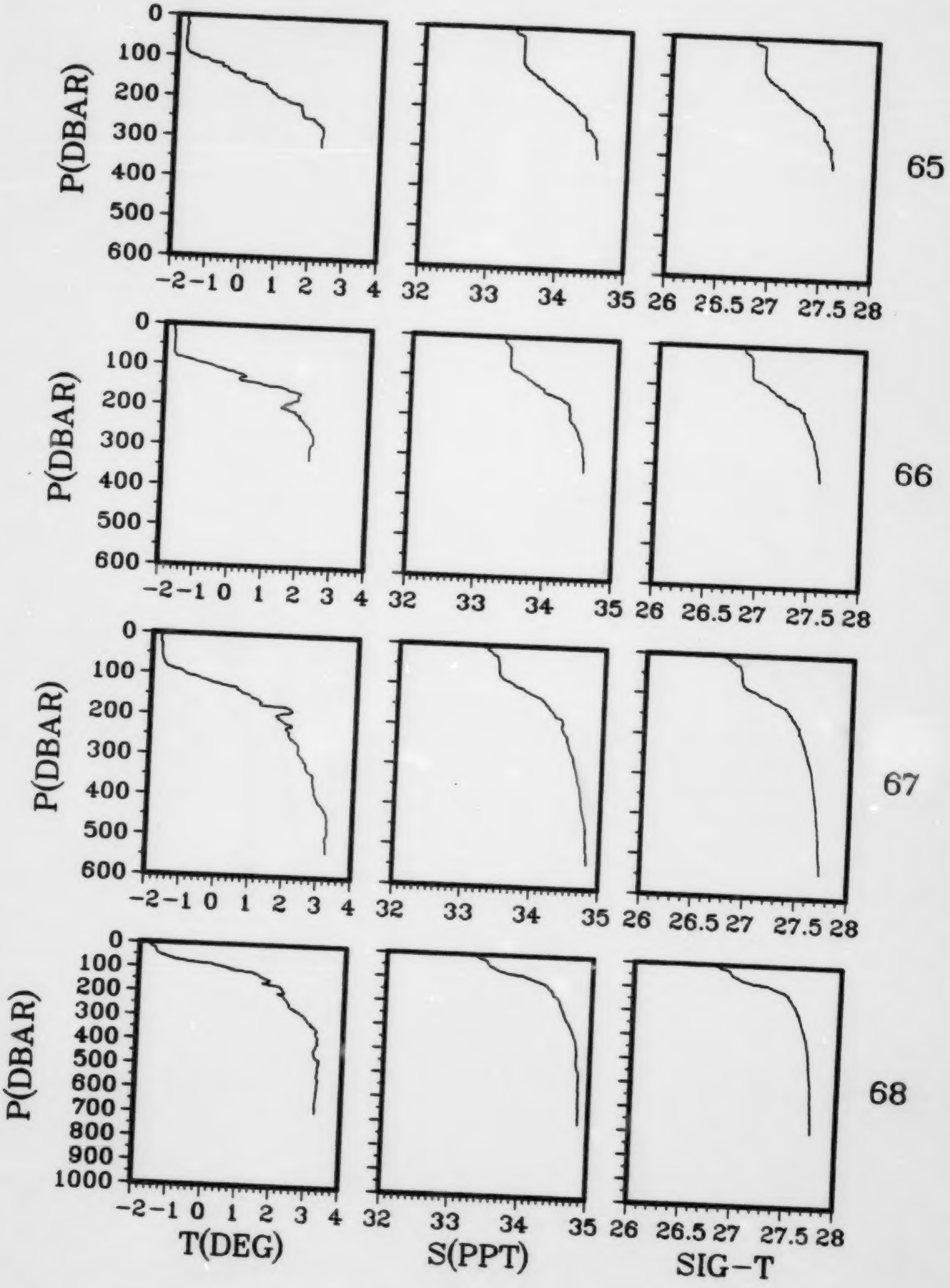
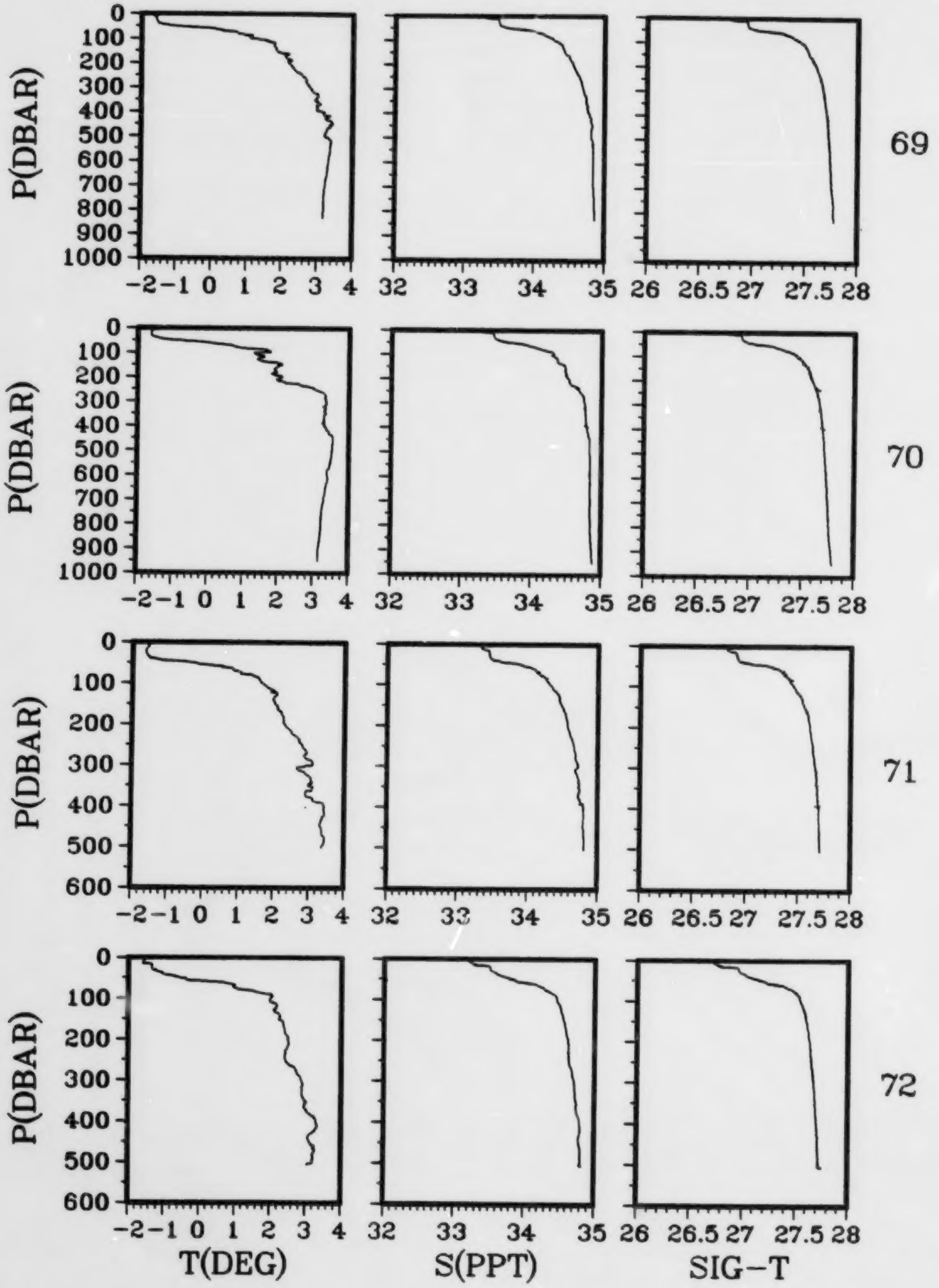
400
500
600
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

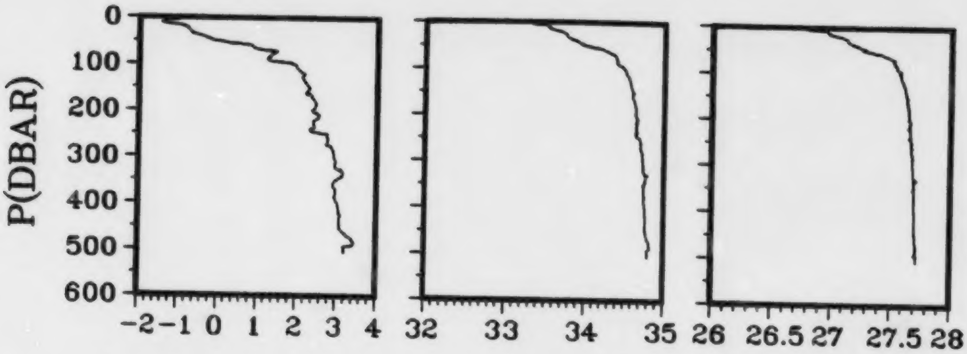
63


P(DBAR)
0
100
200
300
400
500
600
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
T(DEG)
S(PPT)
SIG-T

64


P(DBAR)
0
100
200
300
400
500
600
700
800
900
1000
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
65
66
67
68
T(DEG)
S(PPT)
SIG−T


P(DBAR)
0
100
200
300
400
500
600
700
800
900
1000
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
69
70
71
72
T(DEG)
S(PPT)
SIG-T


P(DBAR)
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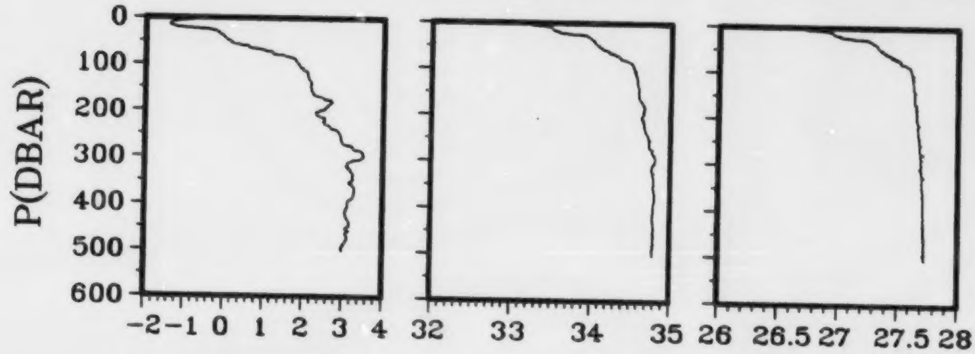
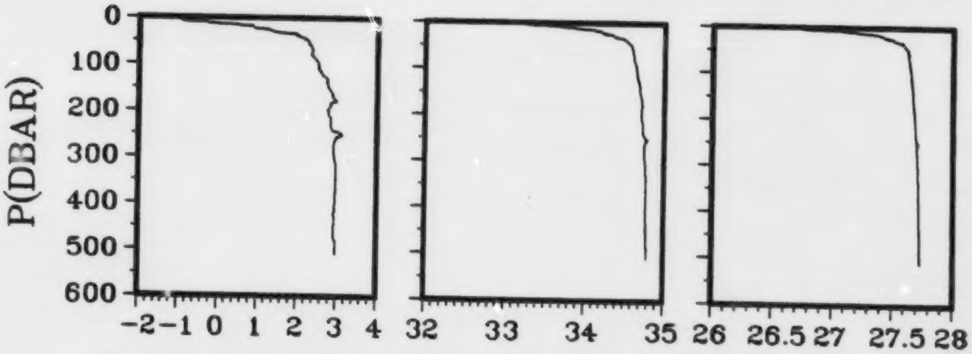
100
200
300
400
500
600
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

73


P(DBAR)
0
100
200
300
400
500
600
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

74


P(DBAR)
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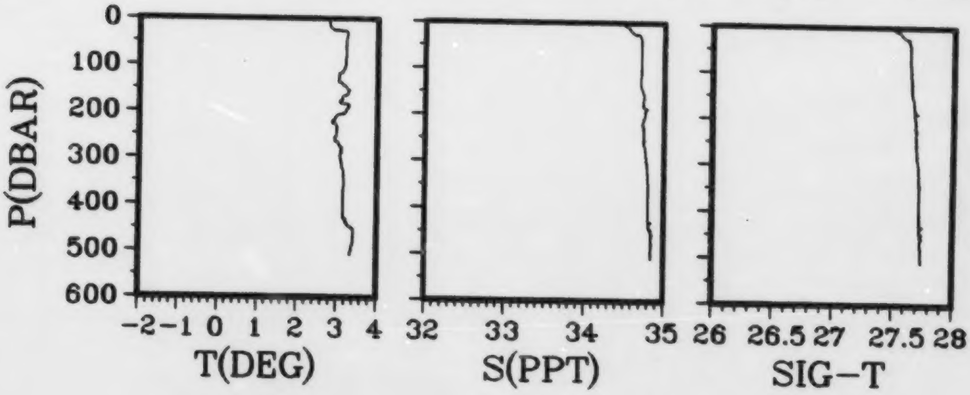
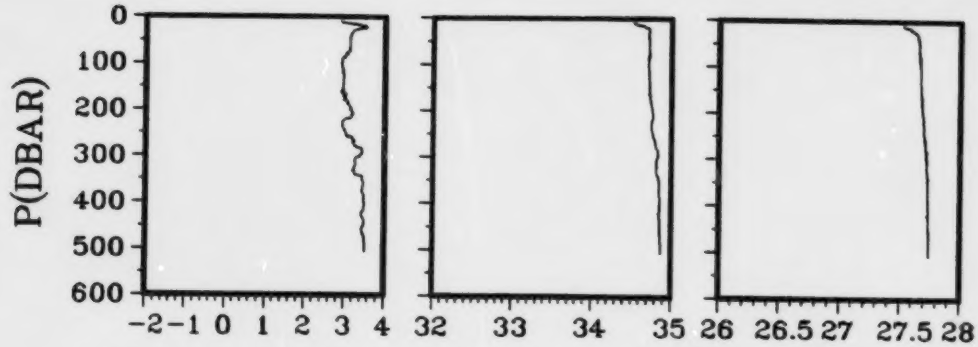
100
200
300
400
500
600
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

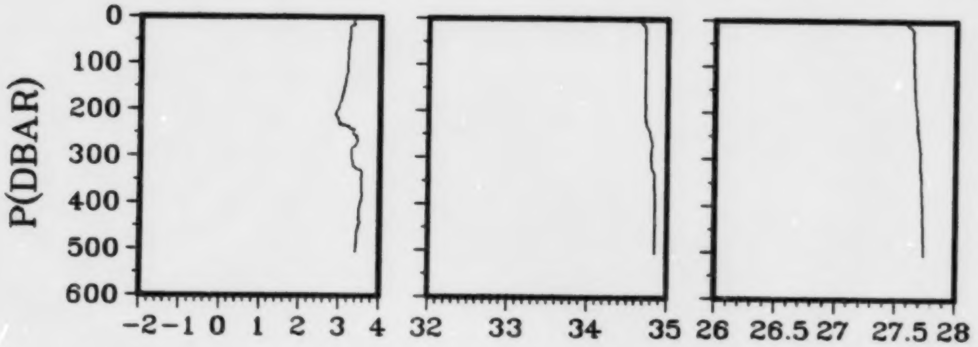
75


P(DBAR)
0
100
200
300
400
500
600
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
T(DEG)
S(PPT)
SIG-T

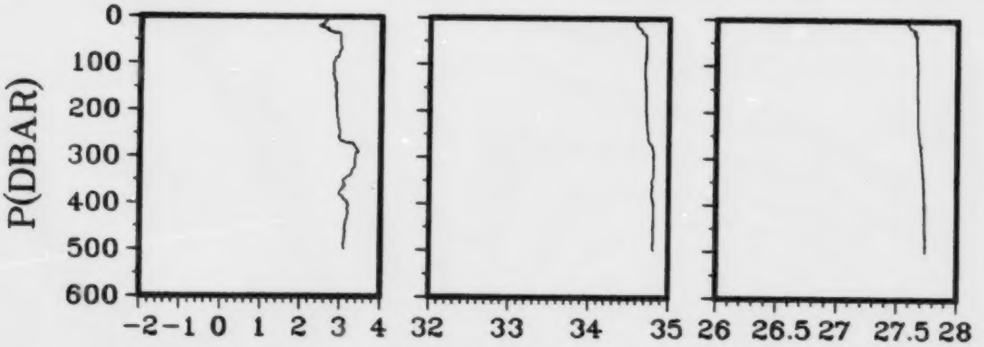
76


P(DBAR)
0
100
200
300
400
500
600
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

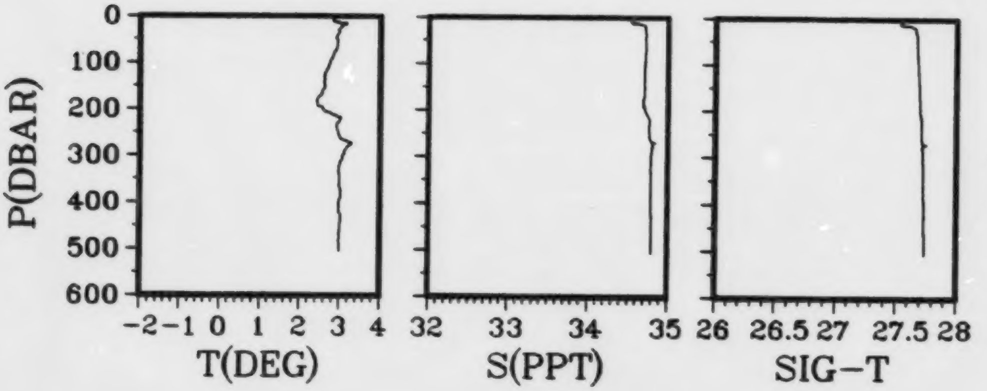
77


P(DBAR)
0
100
200
300
400
500
600
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

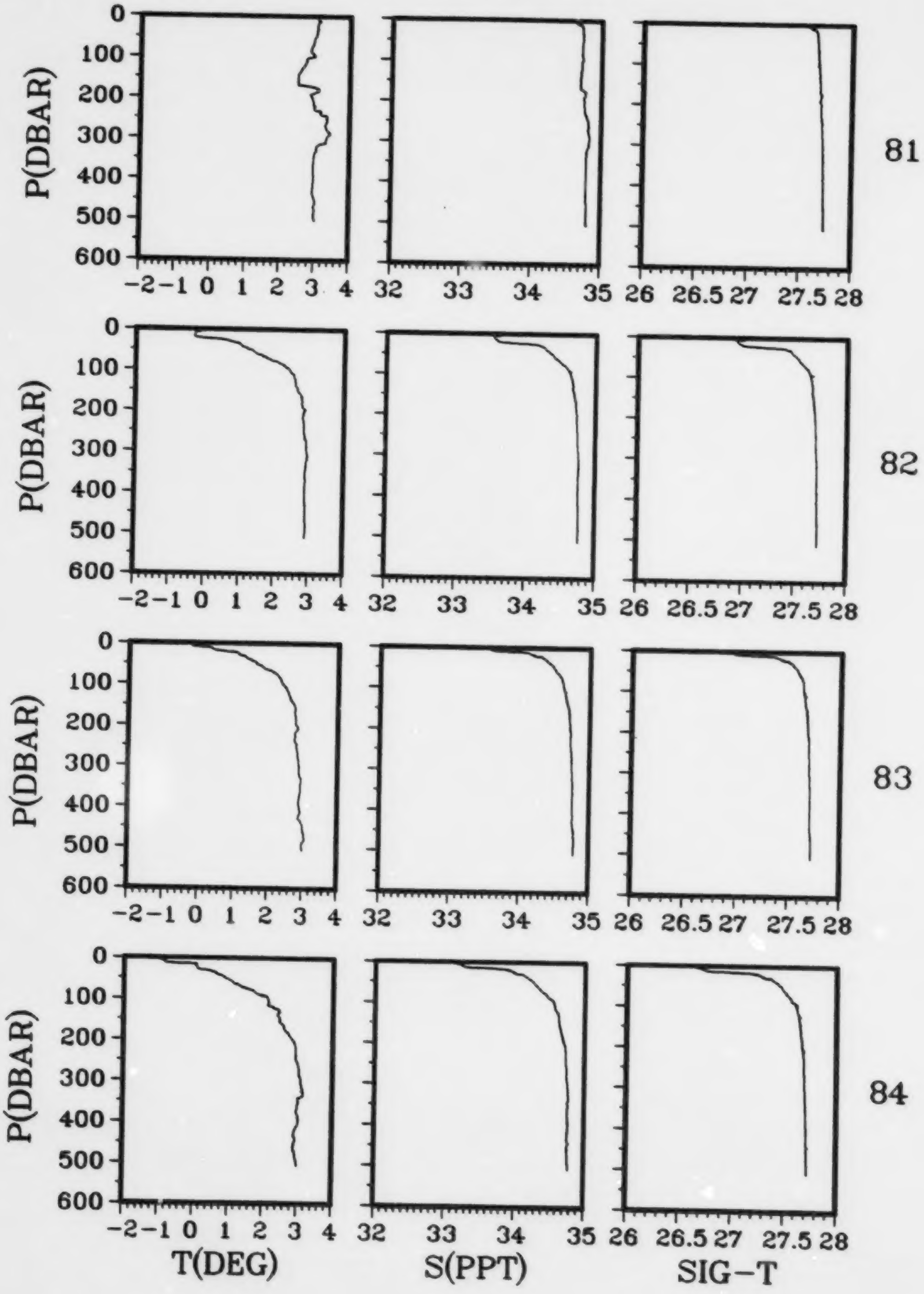
78

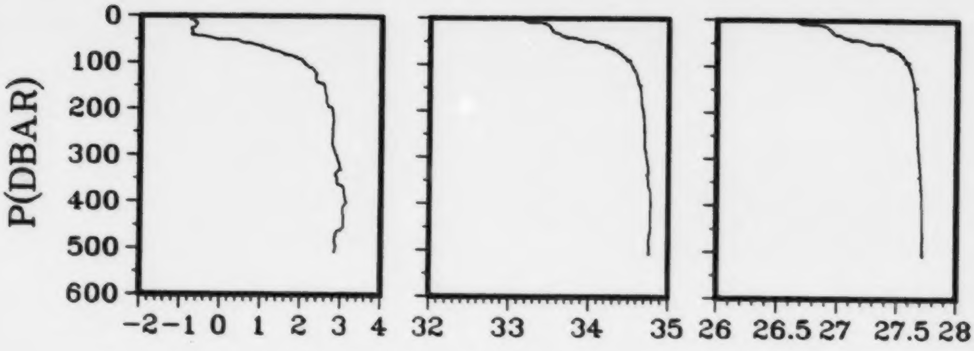

P(DBAR)
0
100
200
300
400
500
600
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

79

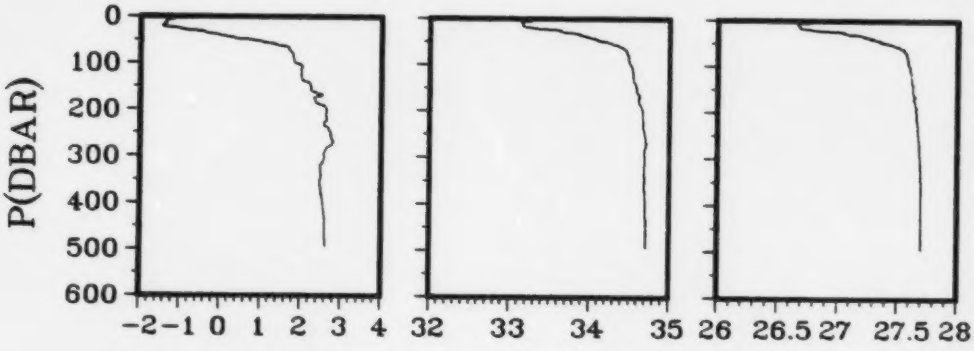

P(DBAR)
0
100
200
300
400
500
600
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
T(DEG)
S(PPT)
SIG−T

80

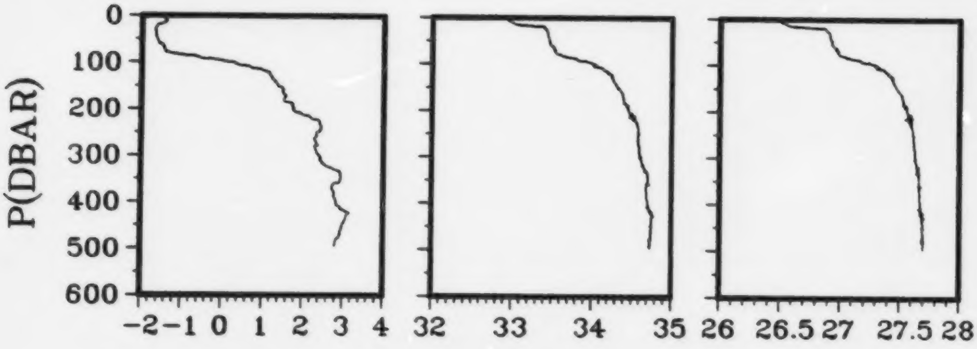

P(DBAR)
0
100
200
300
400
500
600
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
81
82
83
84
T(DEG)
S(PPT)
SIG−T


0
100
200
300
400
500
600
P(DBAR)
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

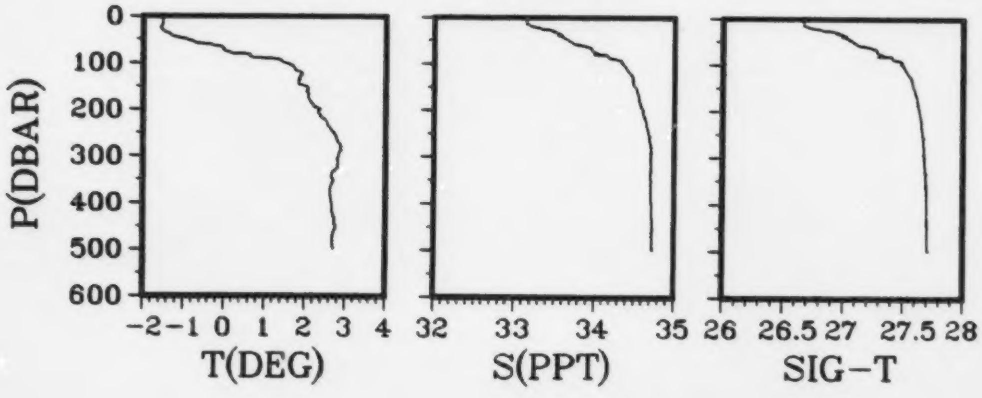
85


0
100
200
300
400
500
600
P(DBAR)
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

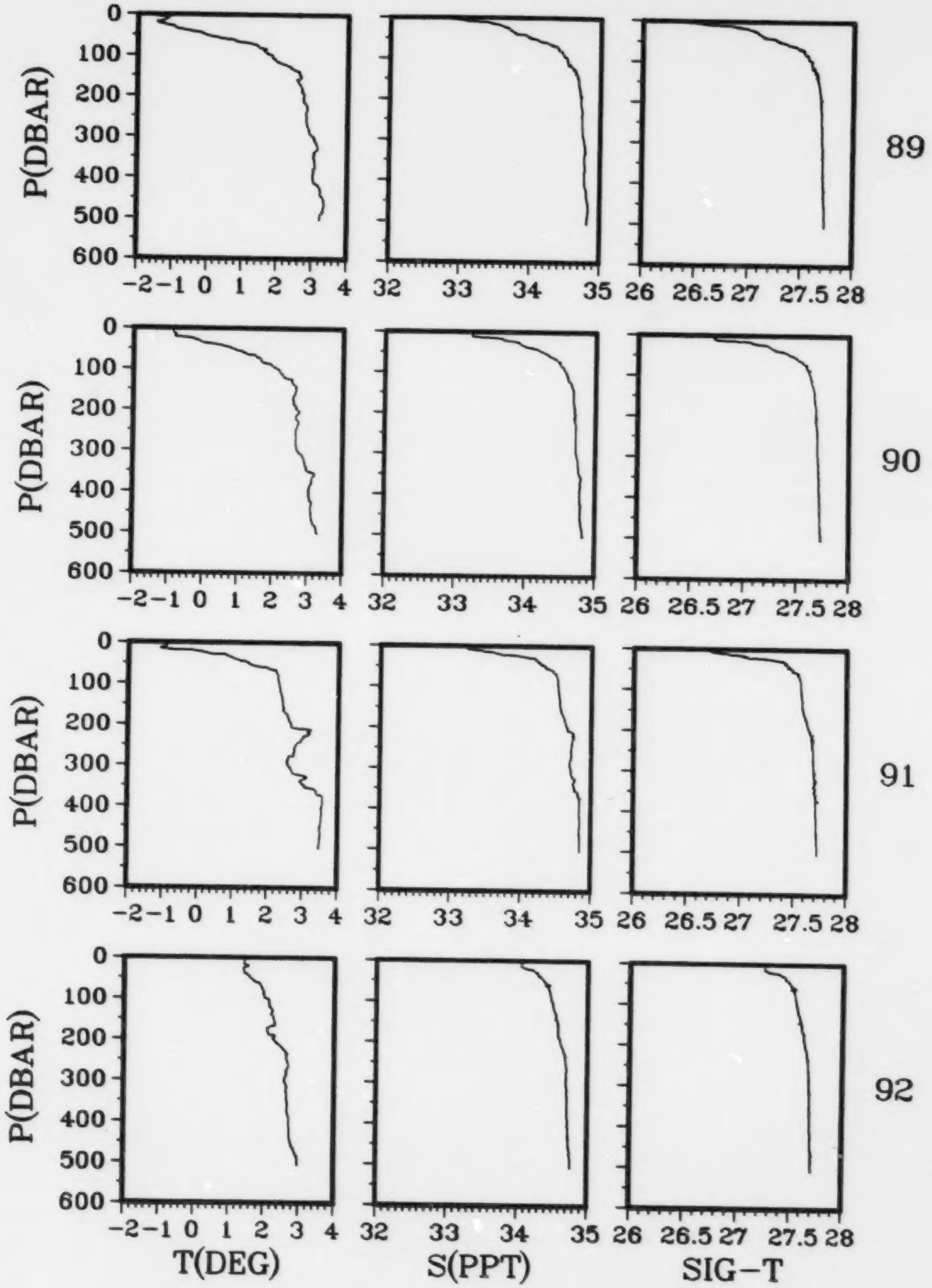
86

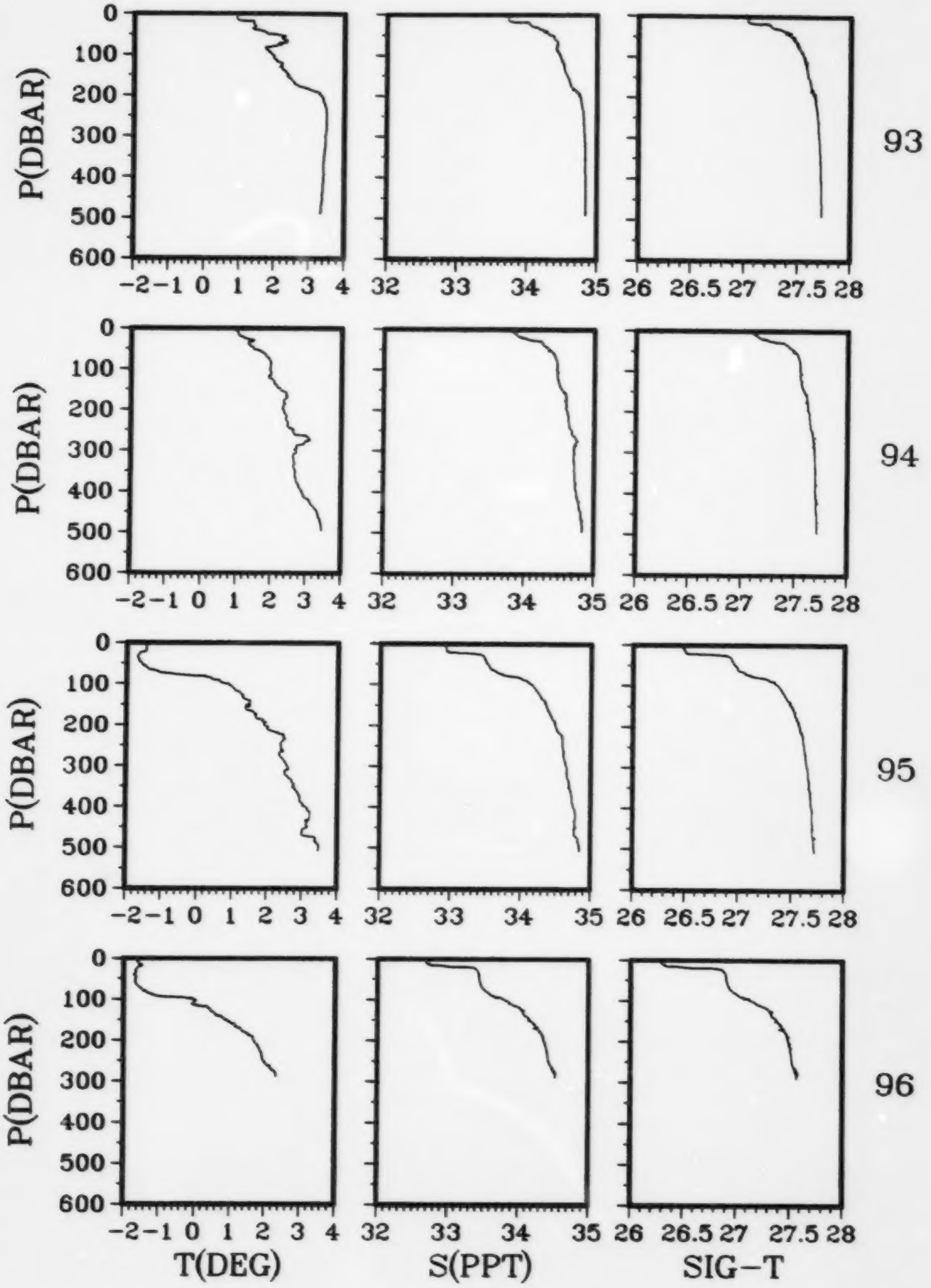

0
100
200
300
400
500
600
P(DBAR)
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28

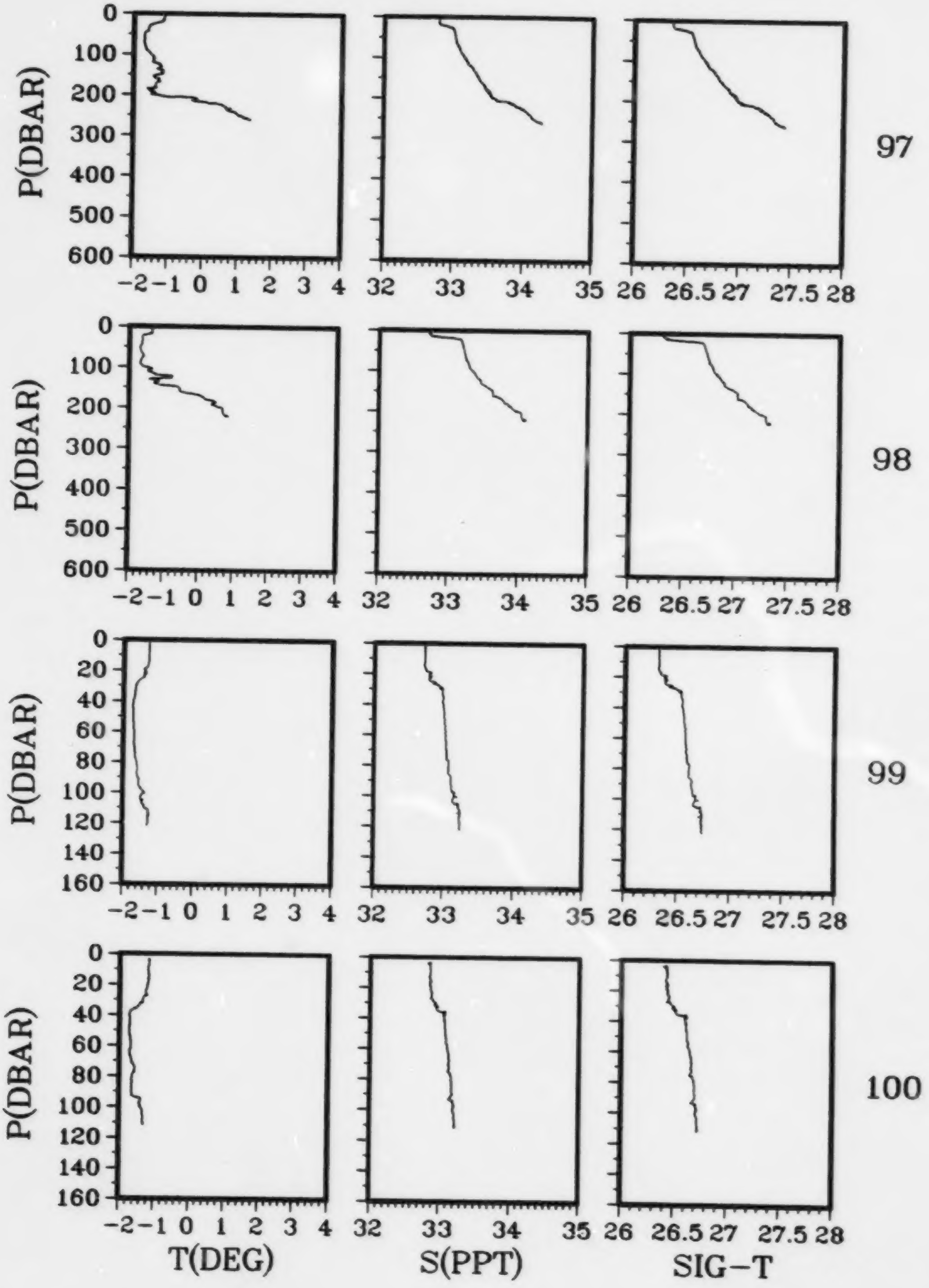
87

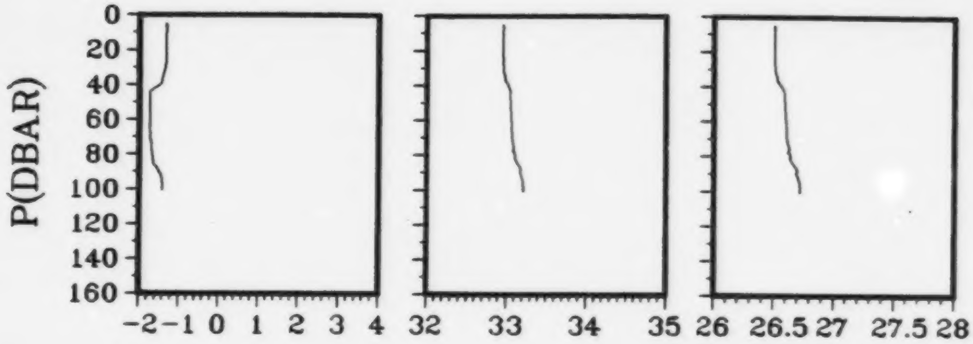

0
100
200
300
400
500
600
P(DBAR)
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
T(DEG)
S(PPT)
SIG−T

88

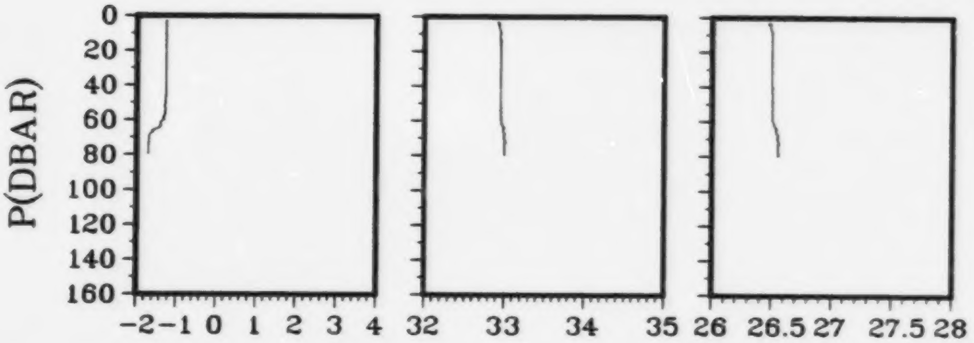

P(DBAR)
0
100
200
300
400
500
600
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
89
90
91
92
T(DEG)
S(PPT)
SIG−T


93
94
95
96
P(DBAR)
0
100
200
300
400
500
600
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
T(DEG)
S(PPT)
SIG−T

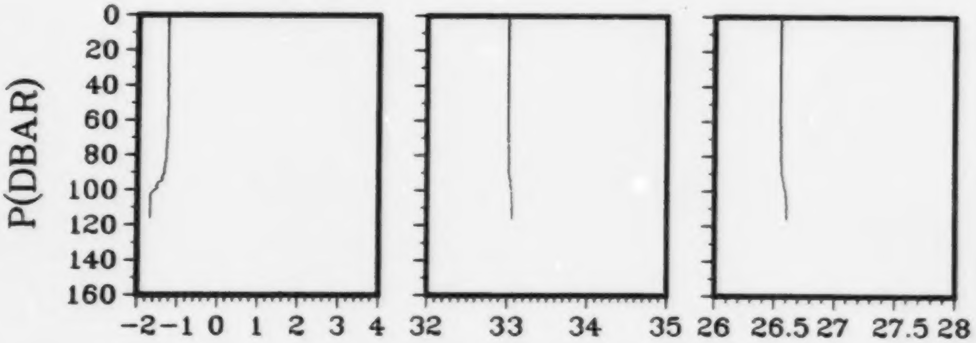

P(DBAR)
0
100
200
300
400
500
600
0
20
40
60
80
100
120
140
160
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
97
98
99
100
T(DEG)
S(PPT)
SIG-T



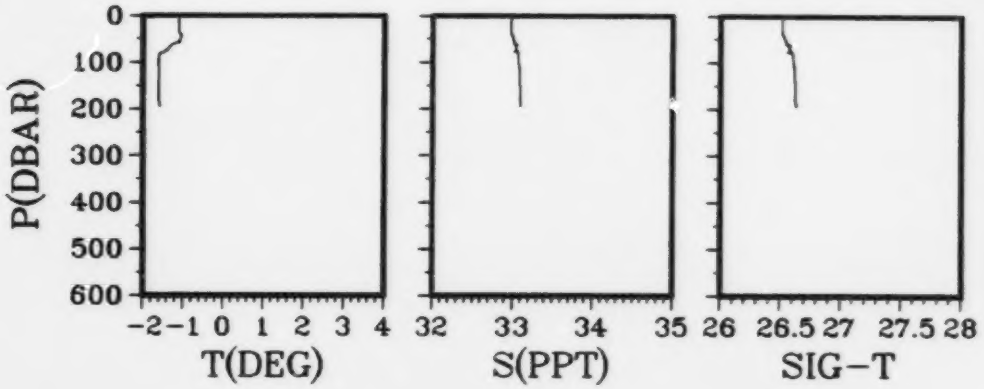
101



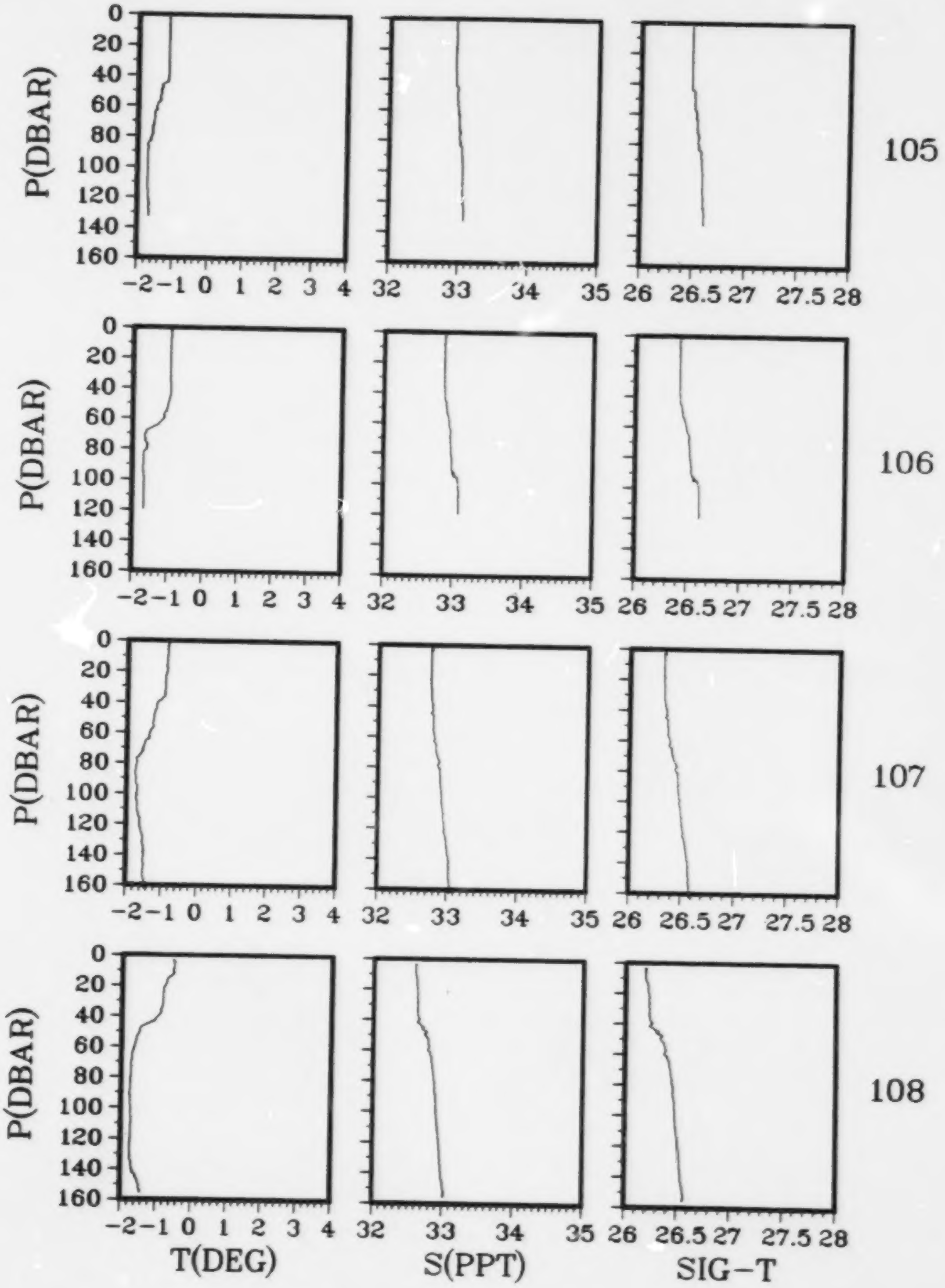
102

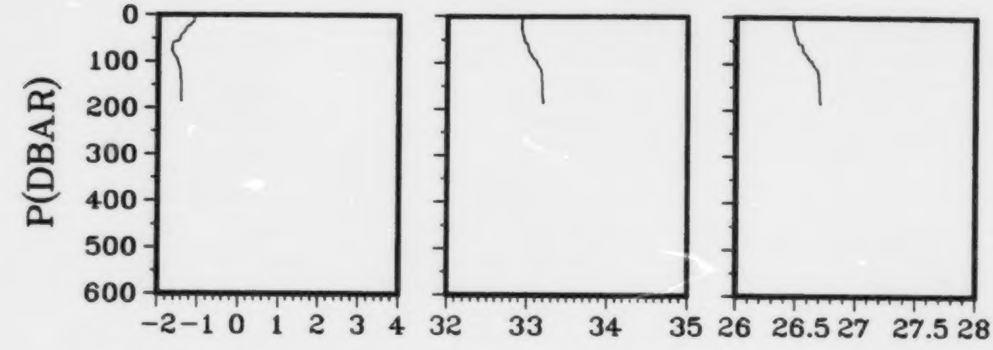


103

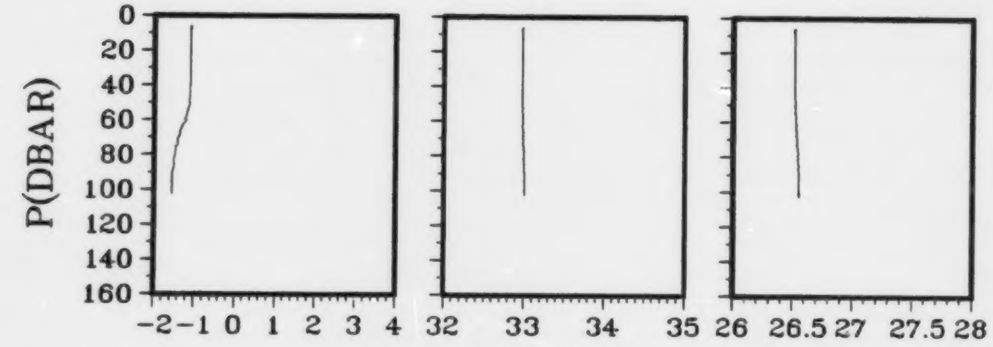


104

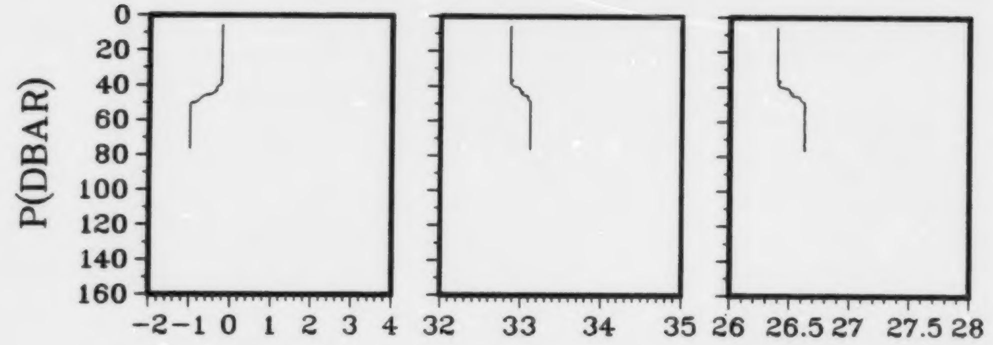

P(DBAR)
0
20
40
60
80
100
120
140
160
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
105
106
107
108
T(DEG)
S(PPT)
SIG−T



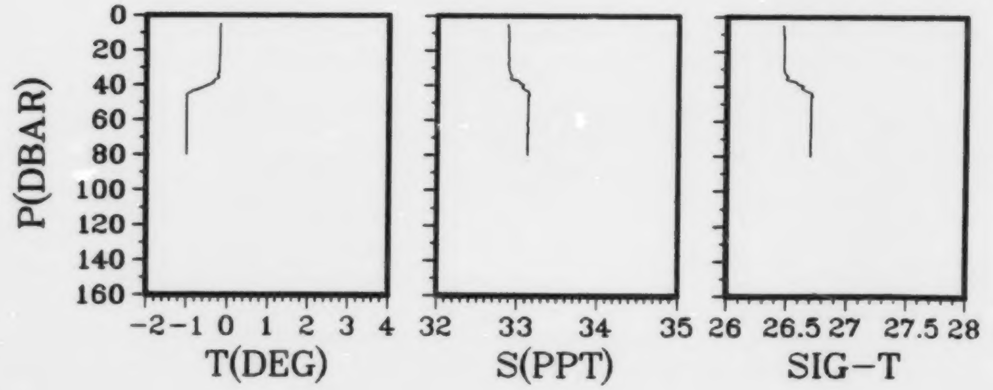
109



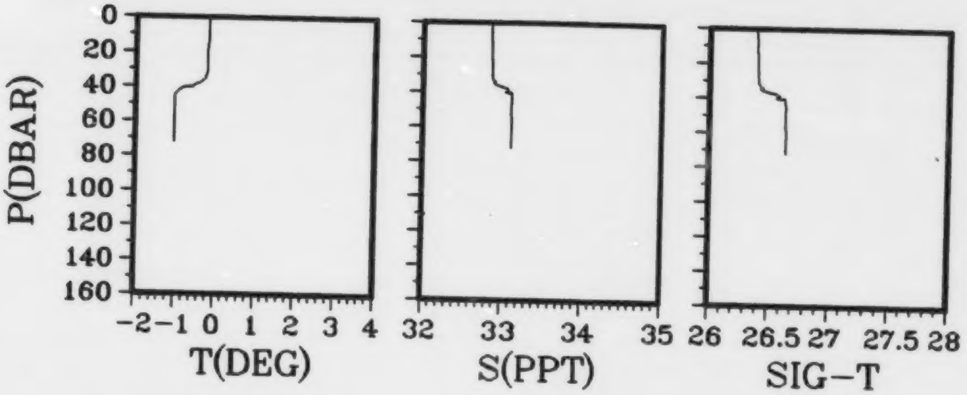
110



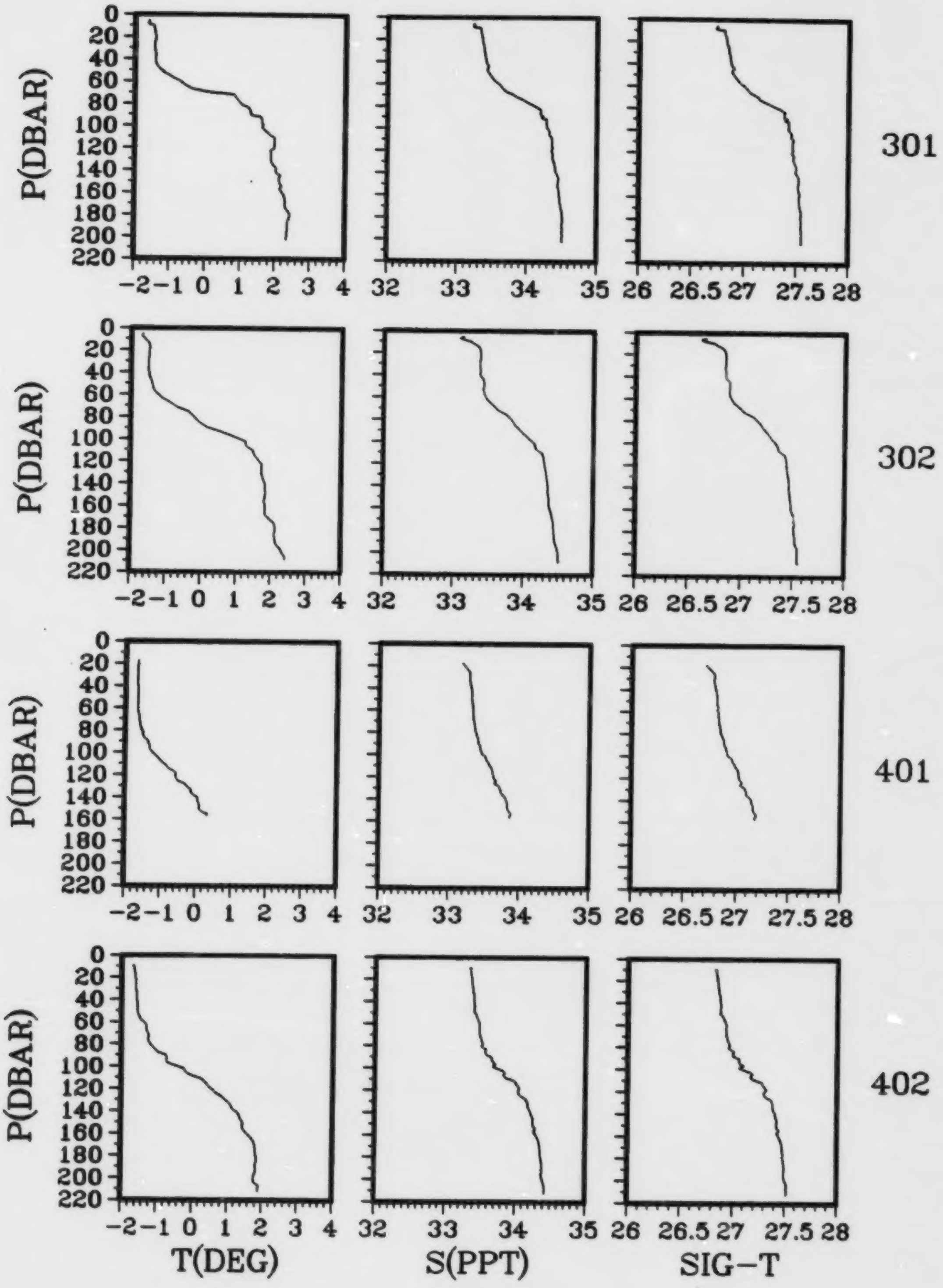
111

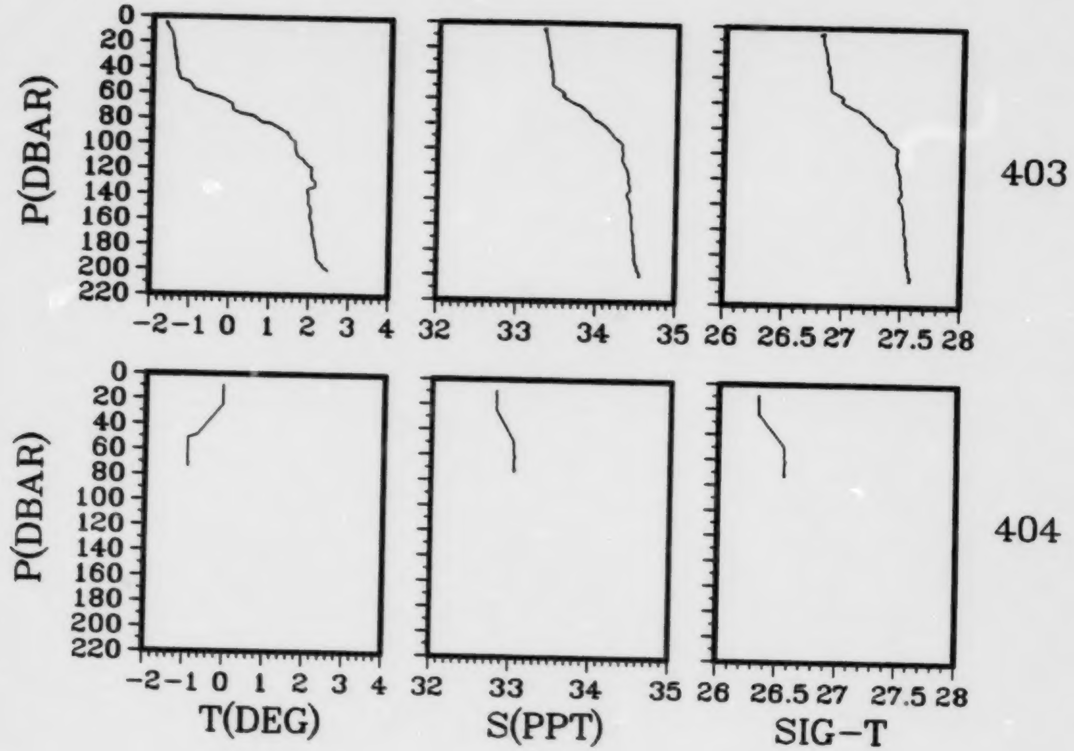


112

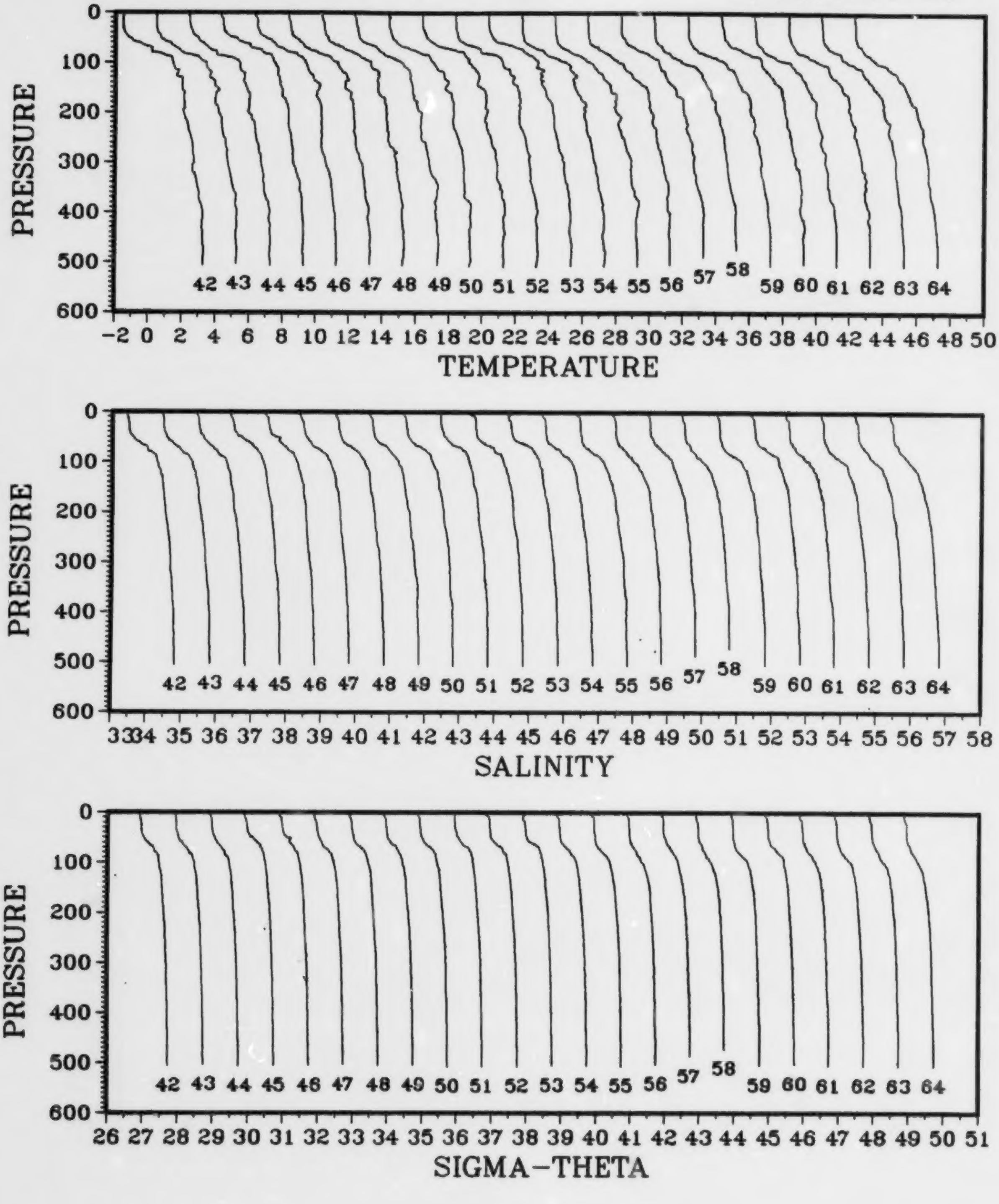

P(DBAR)
0
20
40
60
80
100
120
140
160
-2
-1
0
1
2
3
4
T(DEG)
32
33
34
35
S(PPT)
26
26.5
27
27.5
28
SIG-T

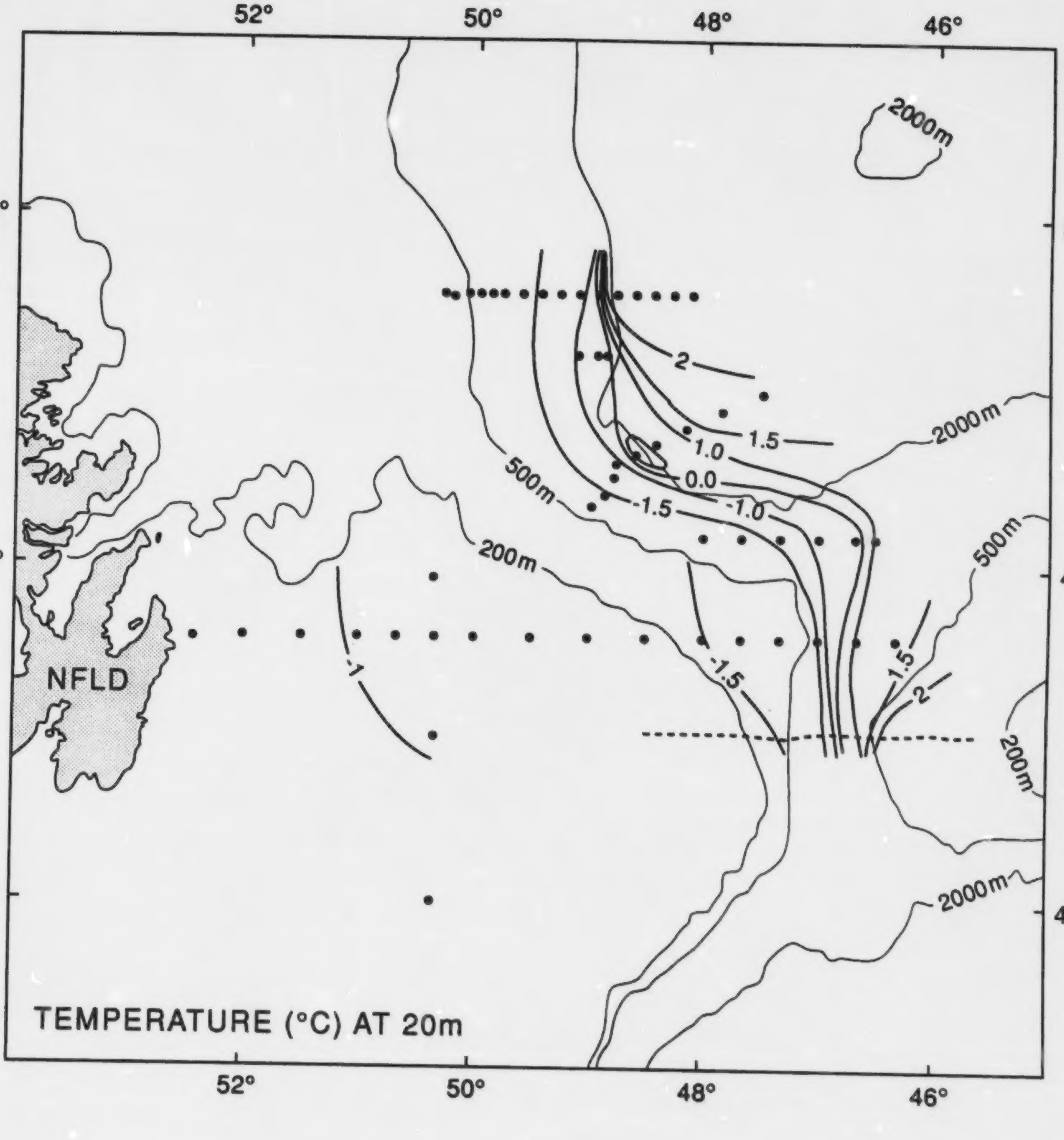
113


P(DBAR)
0
20
40
60
80
100
120
140
160
180
200
220
−2 −1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
301
302
401
402
T(DEG)
S(PPT)
SIG−T

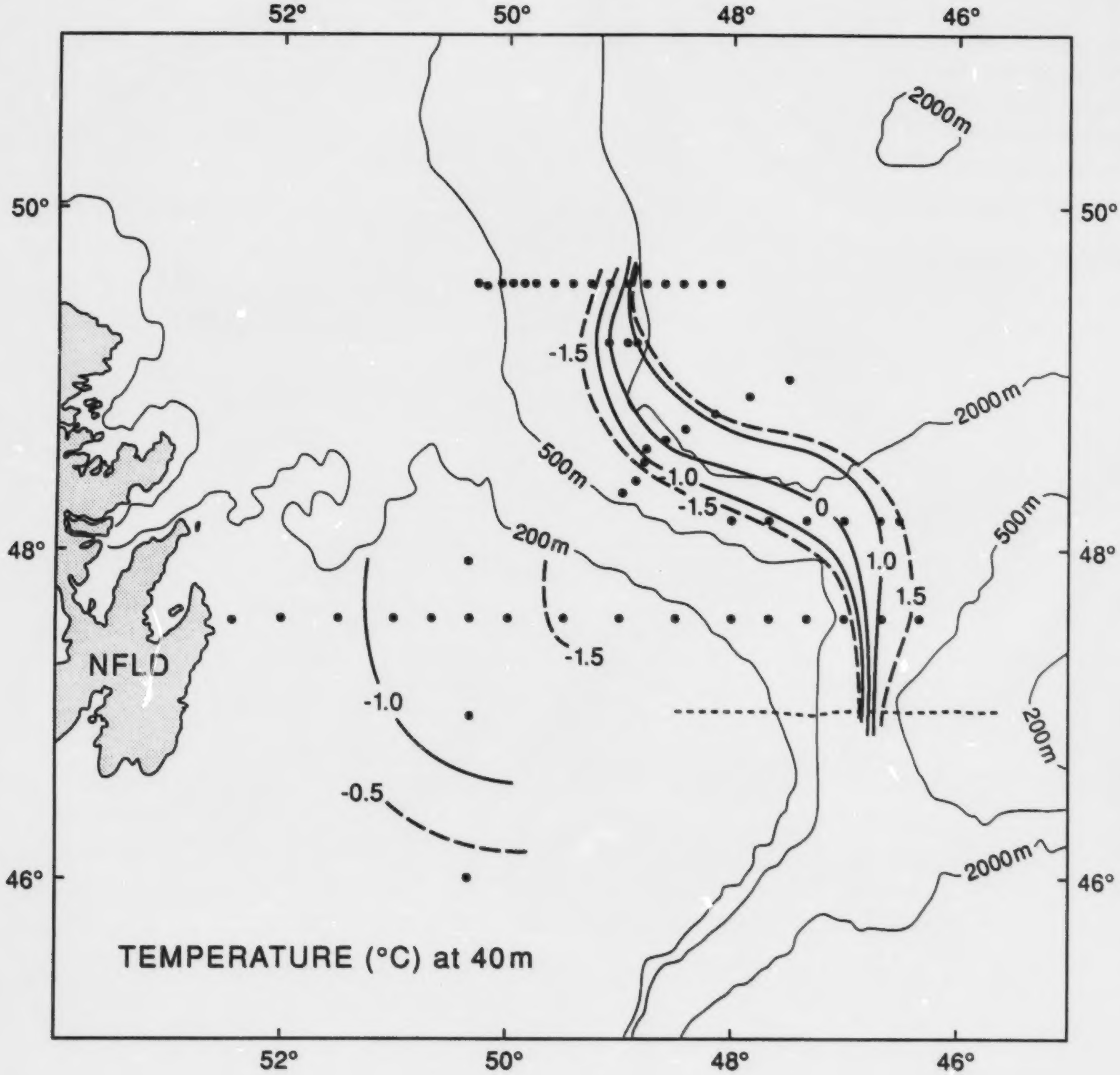

P(DBAR)
0
20
40
60
80
100
120
140
160
180
200
220
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
403
P(DBAR)
0
20
40
60
80
100
120
140
160
180
200
220
-2 -1 0 1 2 3 4
32 33 34 35
26 26.5 27 27.5 28
404
T(DEG)
S(PPT)
SIG-T

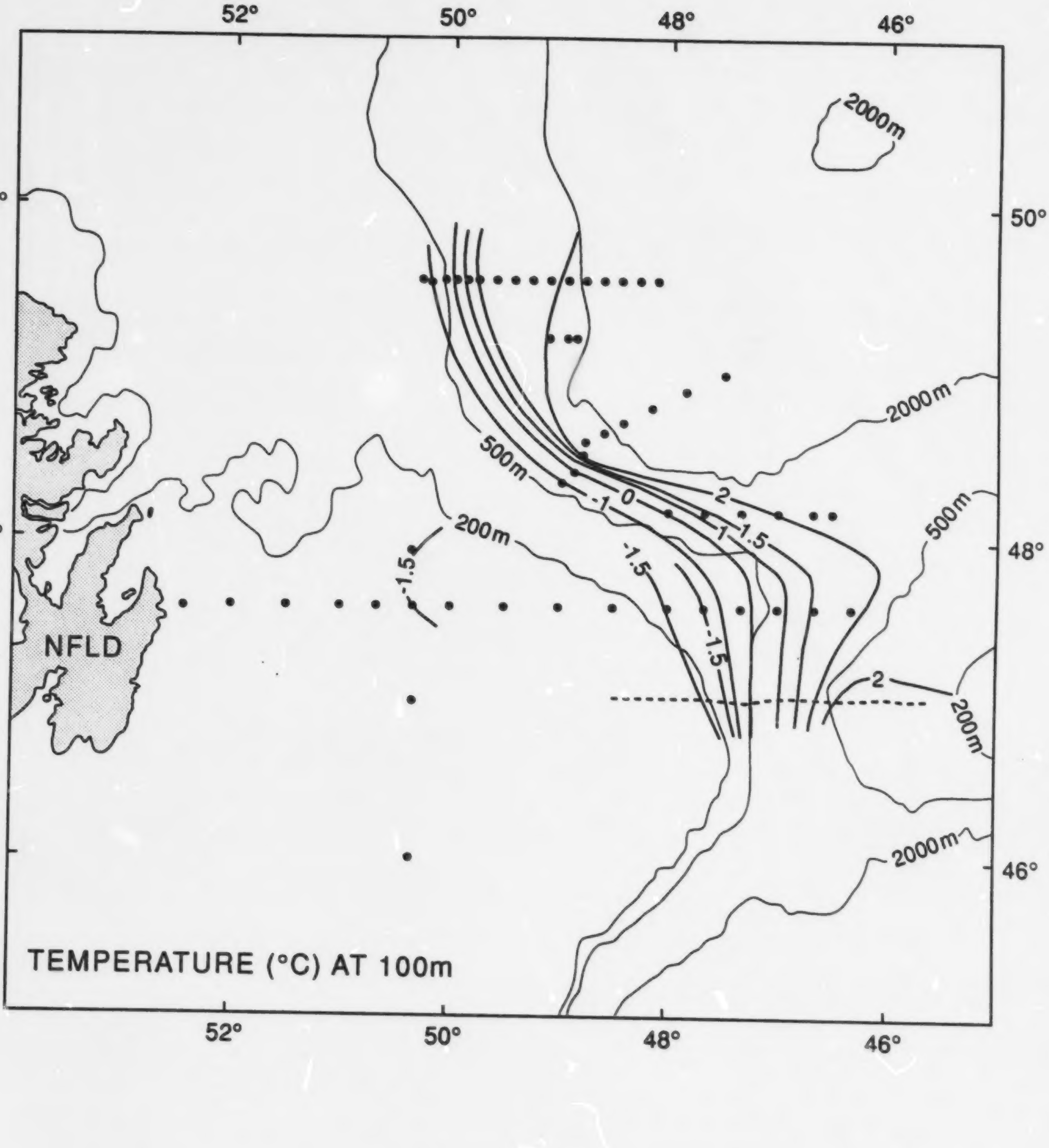
STATION 42-64

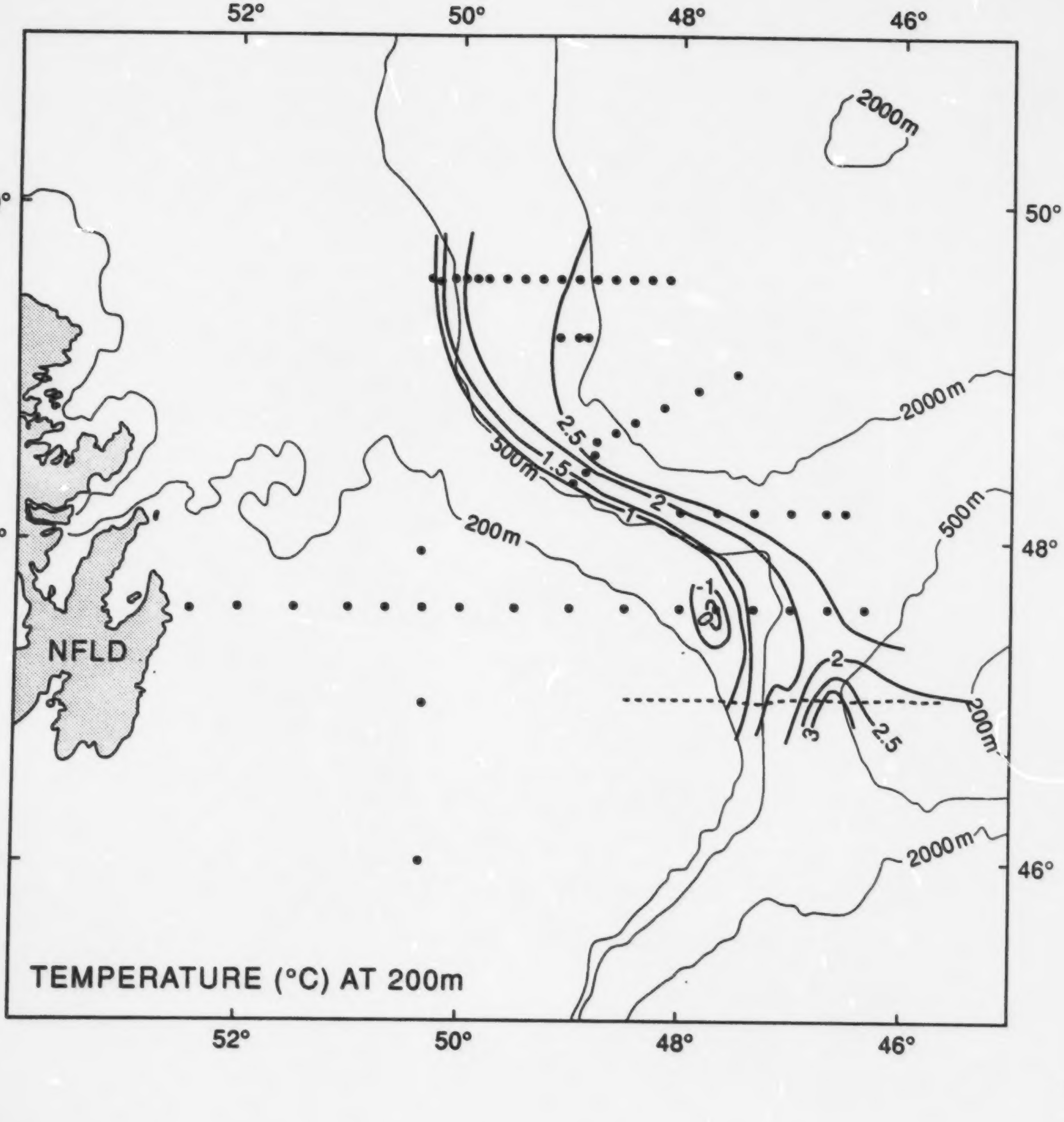


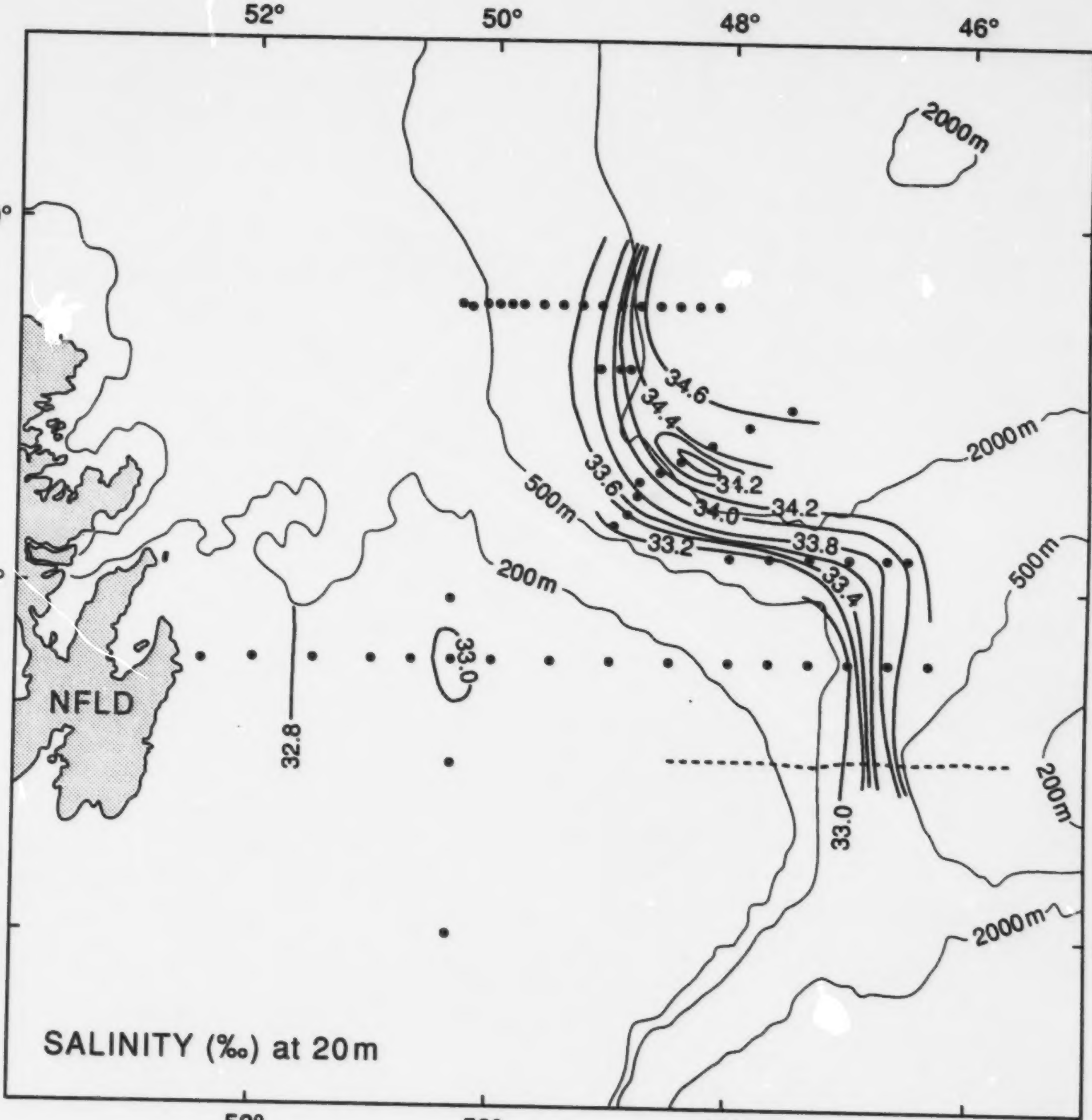

52°
50°
48°
46°
2000m
50°
50°
2
1.5
2000m
1.0
500m
0.0
-1.5
-1.0
200m
48°
48°
500m
NFLD
-1
-1.5
1.5
2
200m
46°
46°
2000m
52°
50°
48°
46°

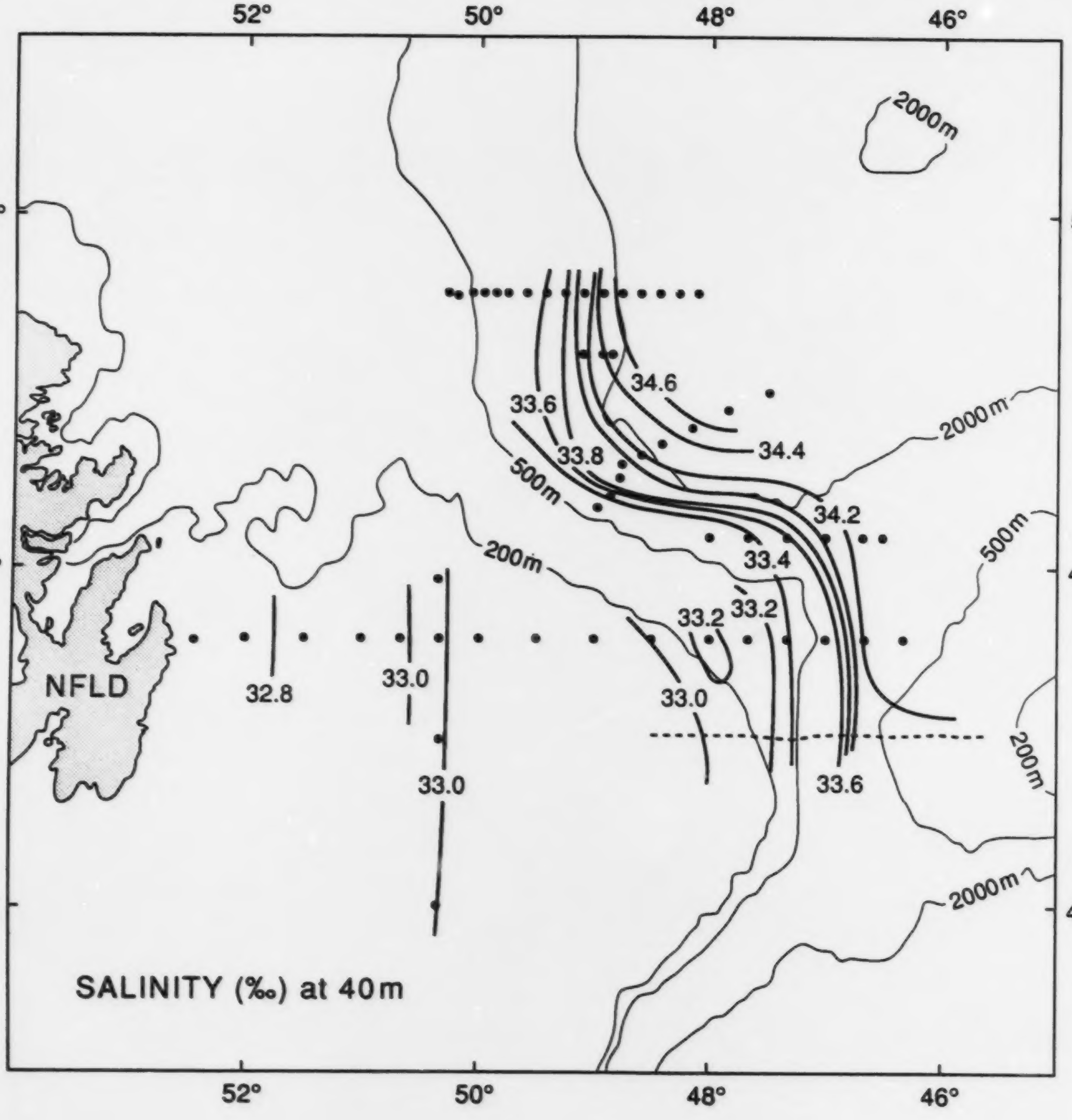
TEMPERATURE (°C) AT 20m

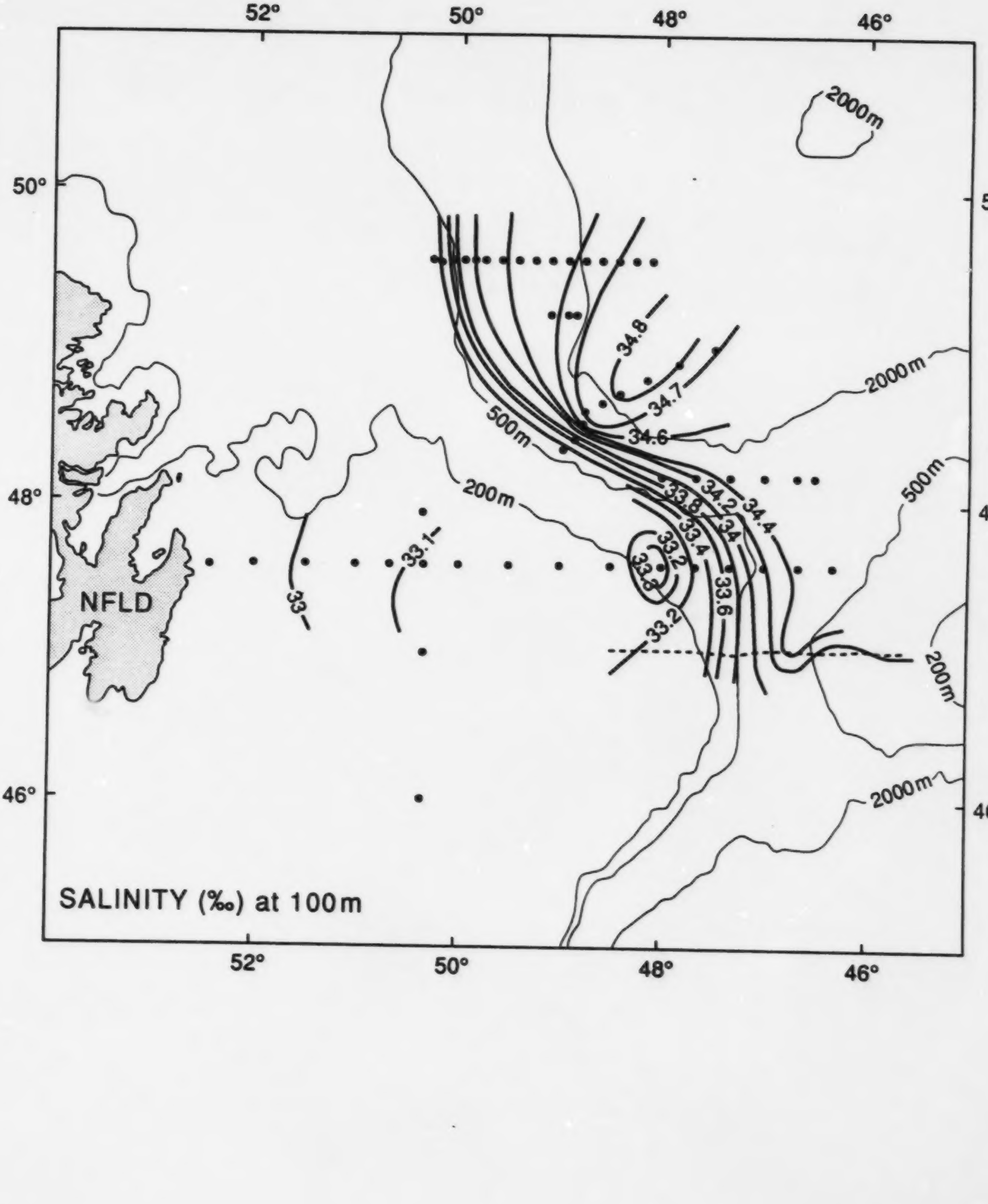

52°
50°
48°
46°
50°
48°
46°
2000m
500m
200m
NFLD
-1.5
-1.0
0
1.0
1.5
-0.5
TEMPERATURE (°C) at 40m

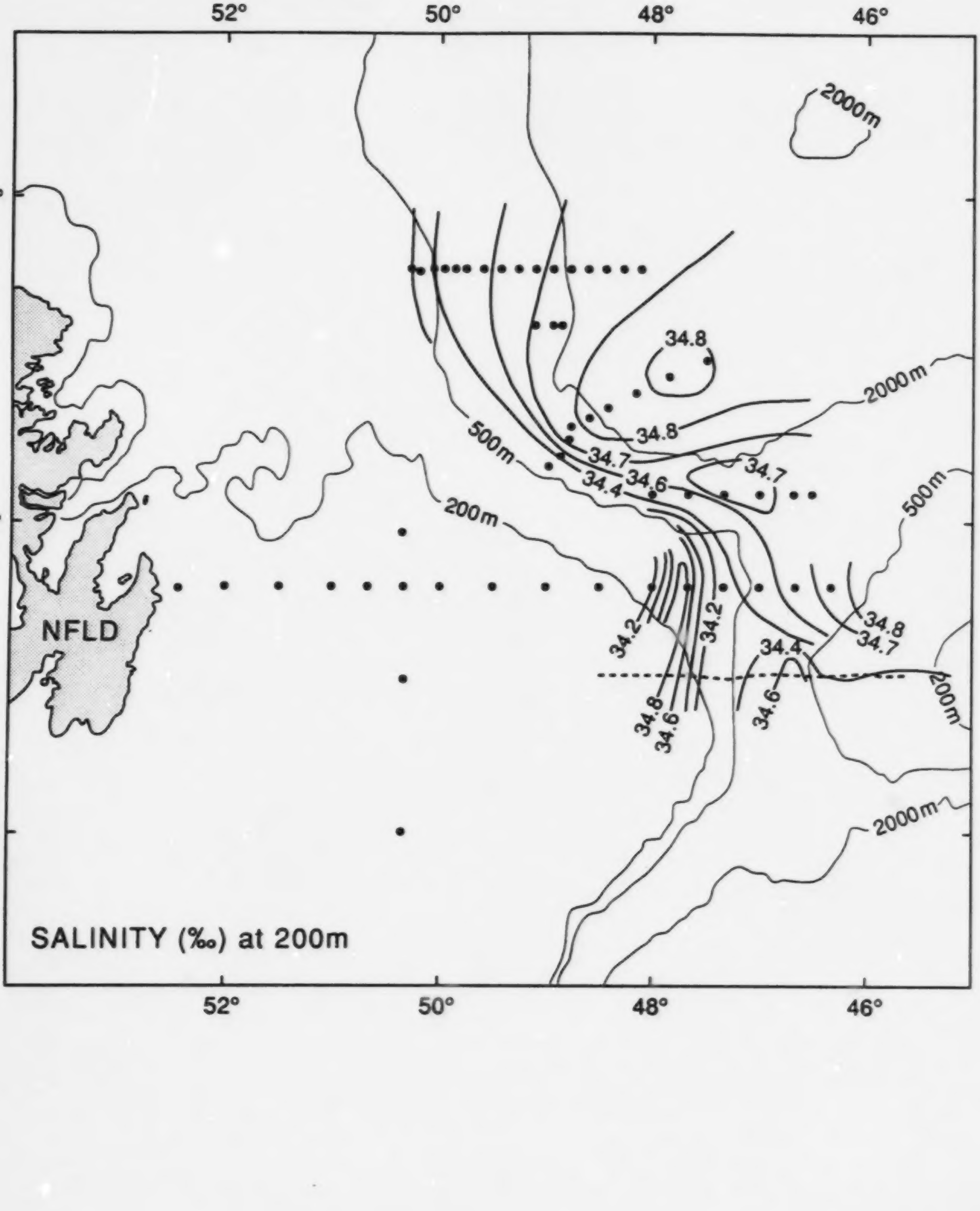

52°
50°
48°
46°
2000m
50°
50°
2000m
500m
2
0
-1
1
1.5
48°
48°
500m
200m
-1.5
-1.5
-1.5
-1.5
NFLD
2
200m
46°
46°
2000m
TEMPERATURE (°C) AT 100m
52°
50°
48°
46°

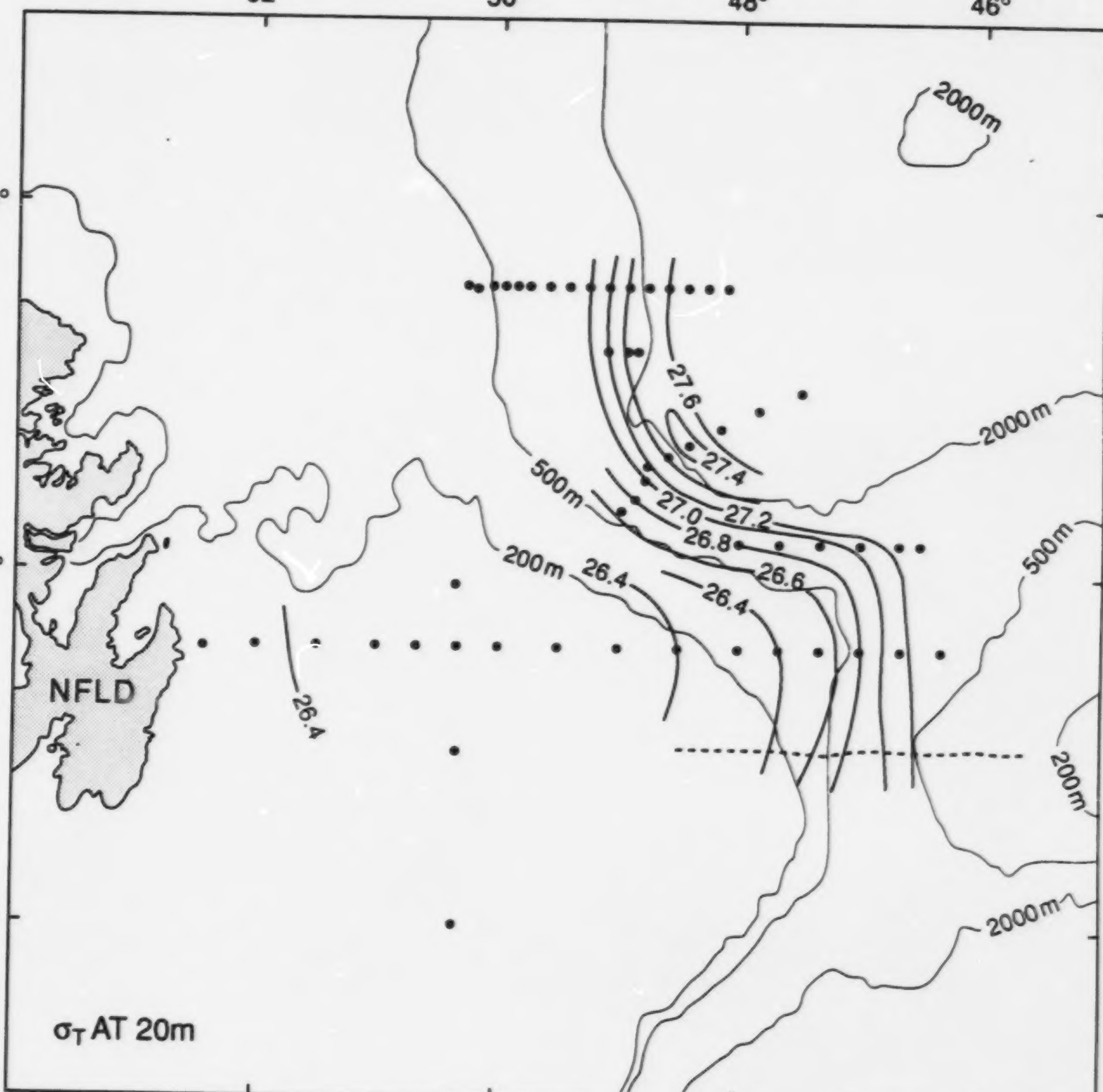

52°
50°
48°
46°
2000m
2000m
2000m
500m
500m
200m
200m
NFLD
2.5
1.5
2
1
1
2
3
2.5
TEMPERATURE (°C) AT 200m

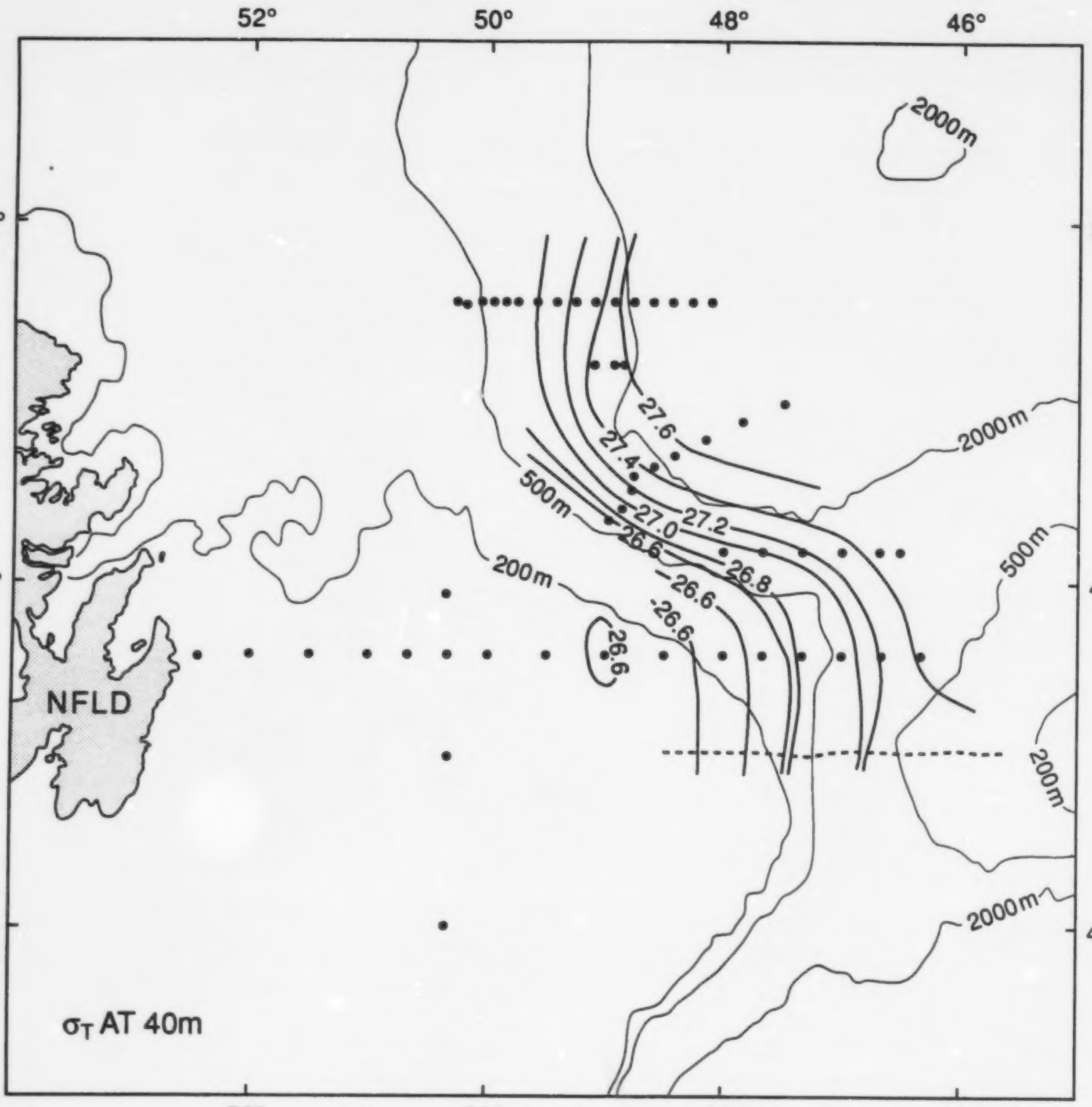

52°
50°
48°
46°
50°
48°
46°
2000m
34.6
34.4
34.2
34.2
34.0
33.8
33.6
33.4
33.2
33.0
33.0
32.8
500m
200m
2000m
500m
200m
2000m
NFLD
SALINITY (‰) at 20m

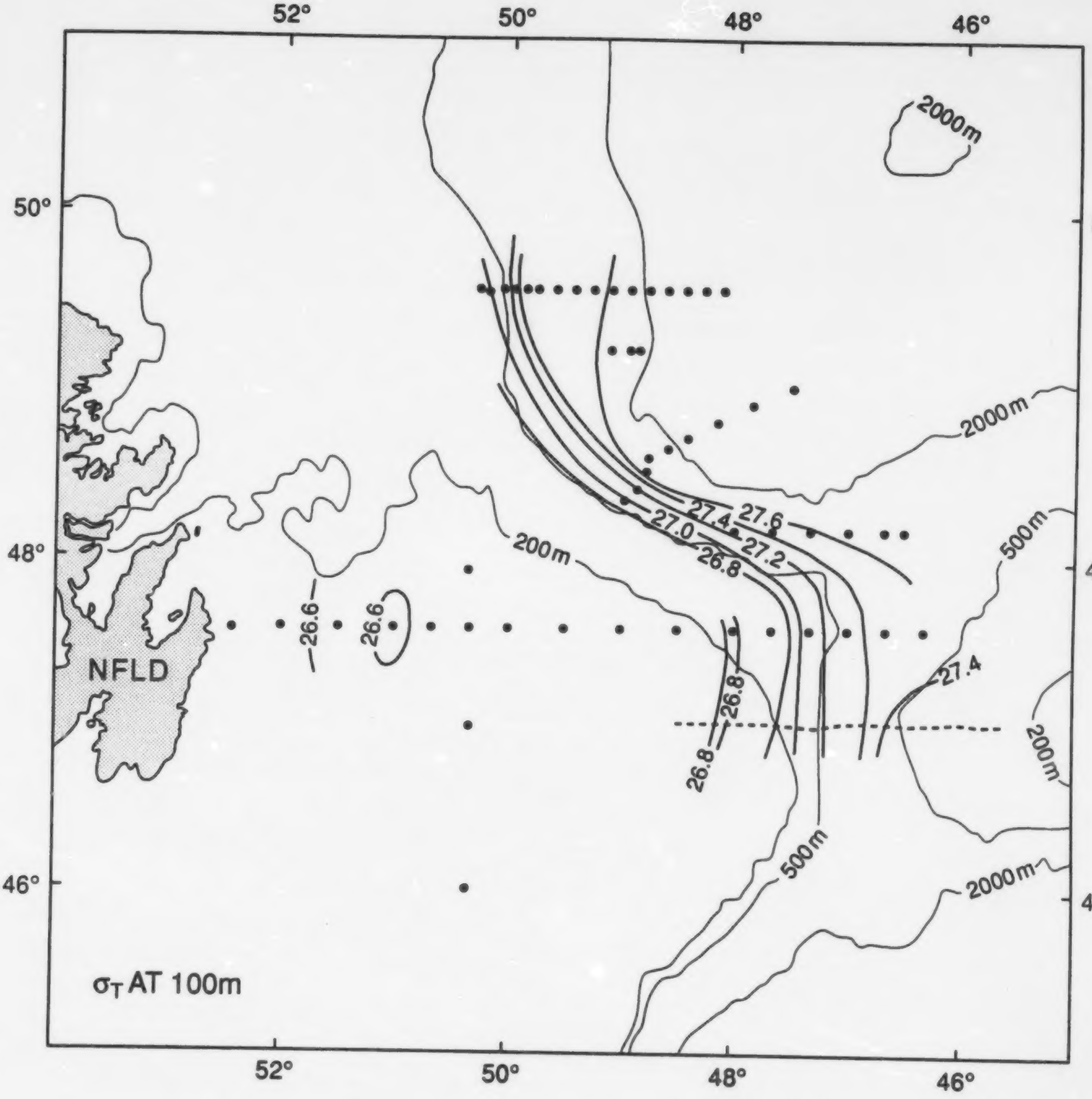

52°
50°
48°
46°
50°
48°
46°
2000m
2000m
2000m
500m
500m
200m
200m
34.6
34.4
34.2
33.6
33.8
33.4
33.2
33.2
33.0
33.6
32.8
33.0
33.0
NFLD
SALINITY (‰) at 40m

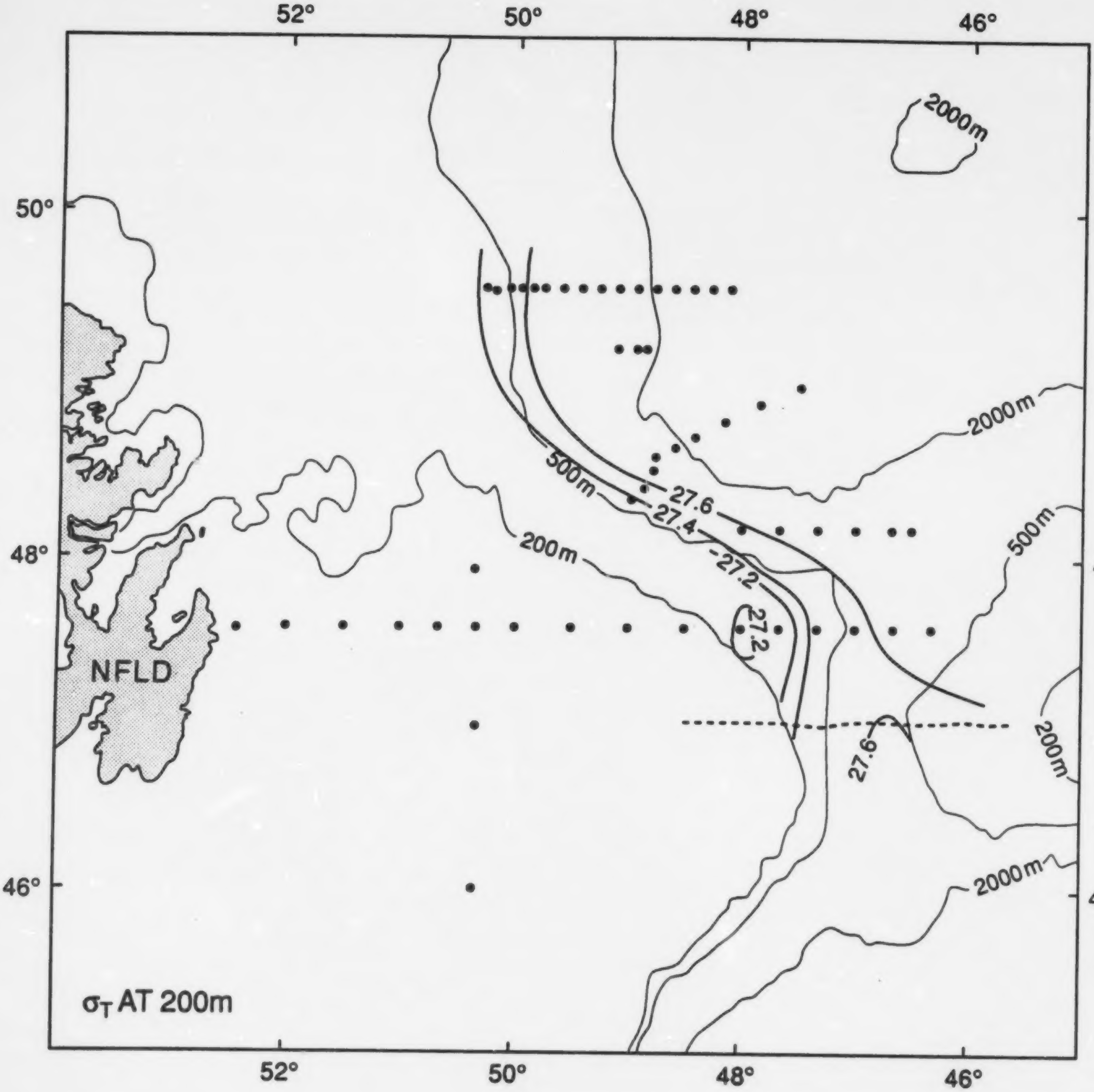

52°
50°
48°
46°
2000m
50°
50°
34.8
34.7
2000m
34.6
500m
NFLD
200m
48°
48°
33.8
34.2
34.4
500m
33.1
33.4
34
33.2
33
33.6
33.6
33.2
200m
46°
2000m
46°
SALINITY (‰) at 100m
52°
50°
48°
46°

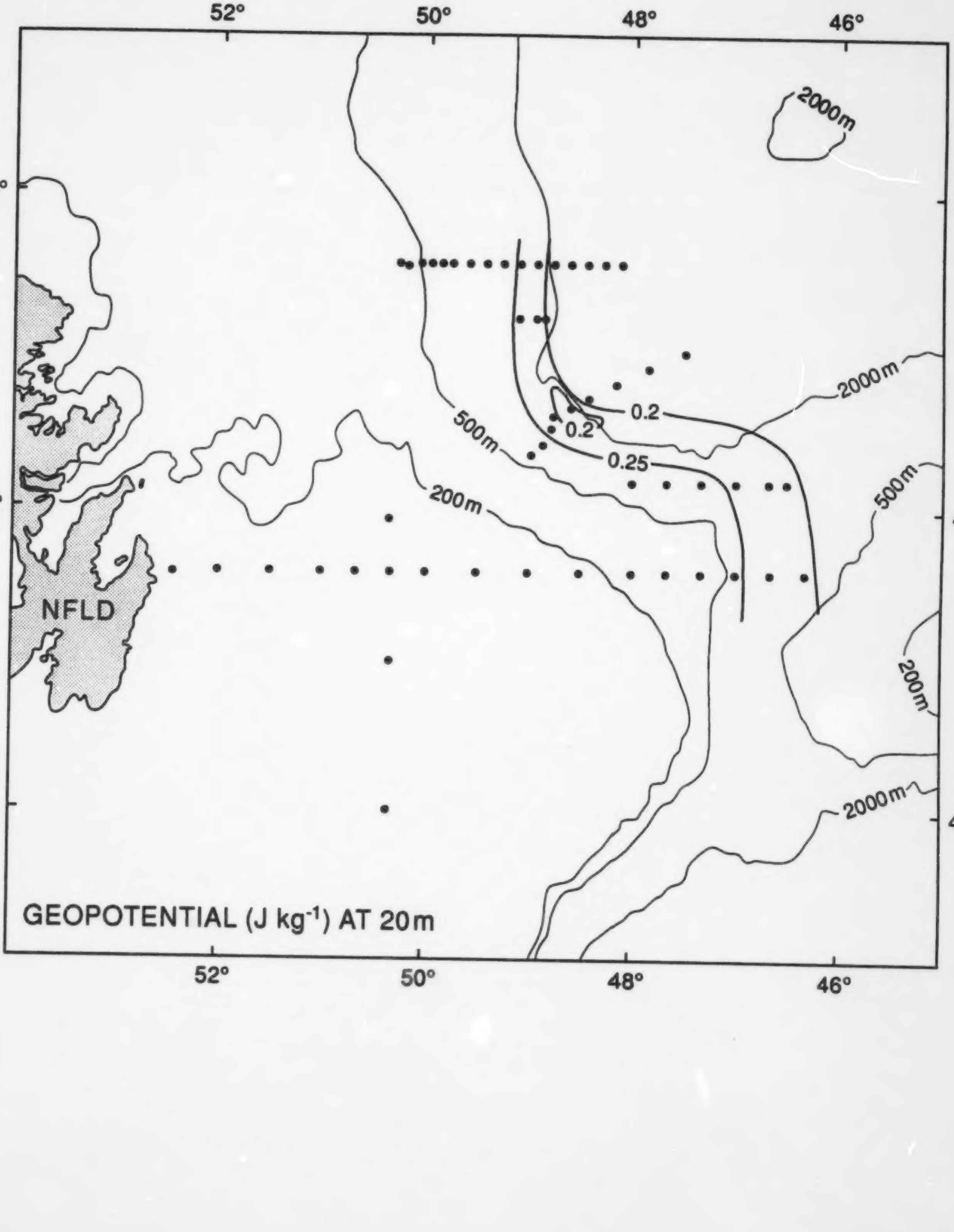

52°
50°
48°
46°
50°
48°
46°
2000m
34.8
2000m
34.8
500m
34.7
34.7
34.6
34.4
200m
500m
NFLD
34.2
34.2
34.8
34.7
34.4
34.8
34.6
34.6
200m
2000m
SALINITY (‰) at 200m

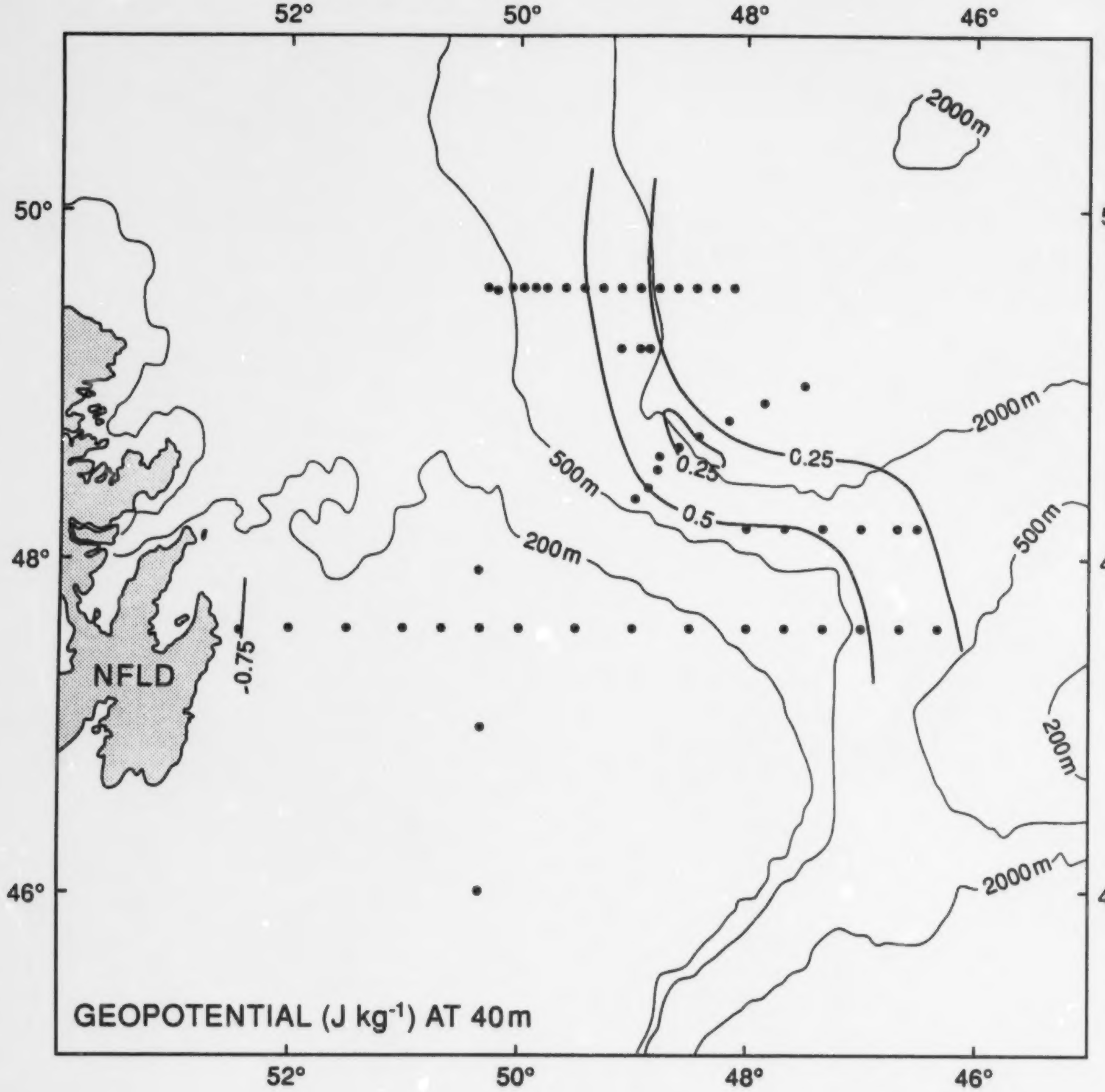

52°
50°
48°
46°
2000m
2000m
2000m
500m
500m
200m
200m
27.6
27.4
27.2
27.0
26.8
26.6
26.4
26.4
26.4
NFLD
σT AT 20m

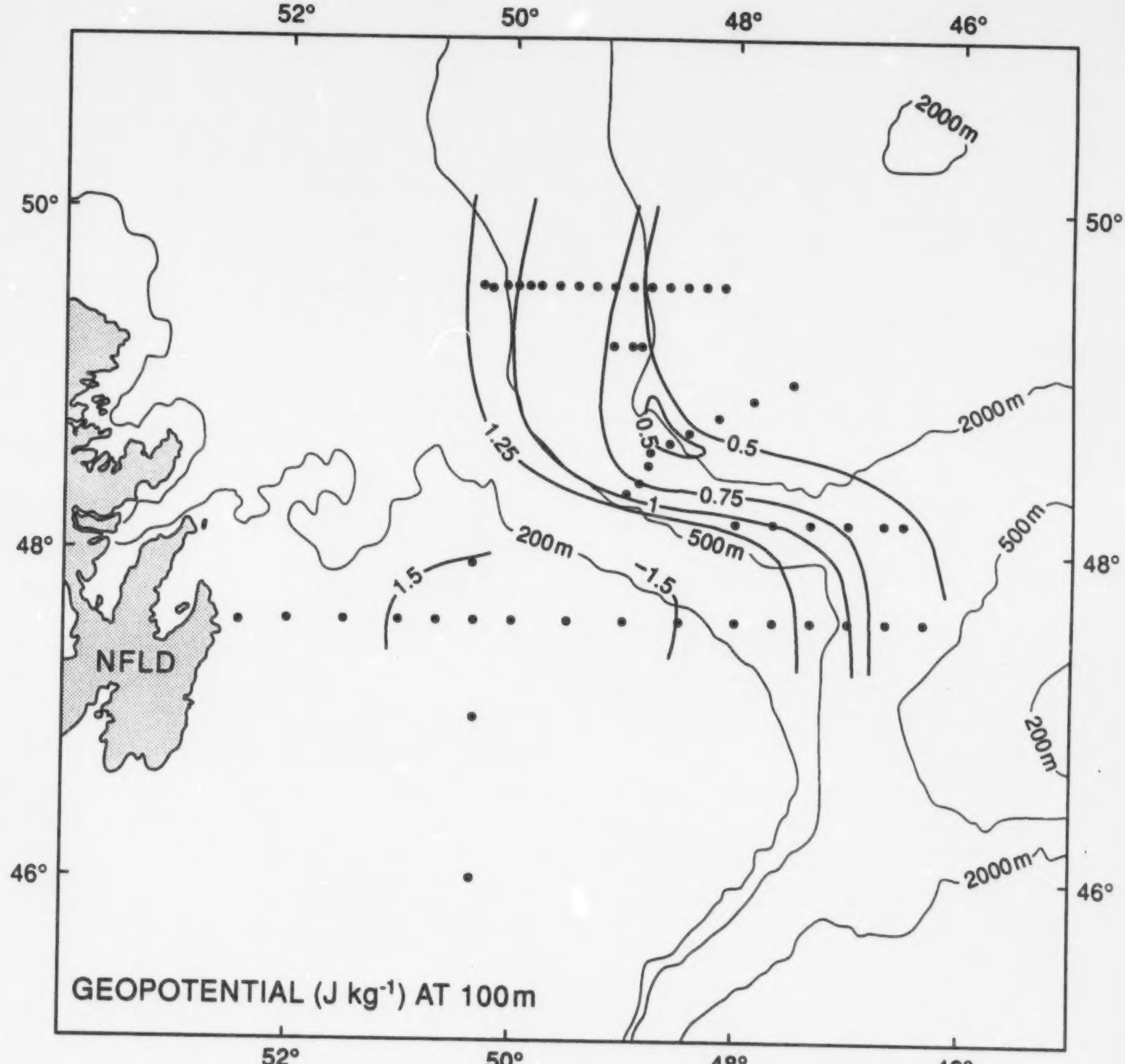

52°
50°
48°
46°
50°
48°
46°
2000m
500m
200m
27.6
27.4
27.2
27.0
26.8
26.6
NFLD
σT AT 40m

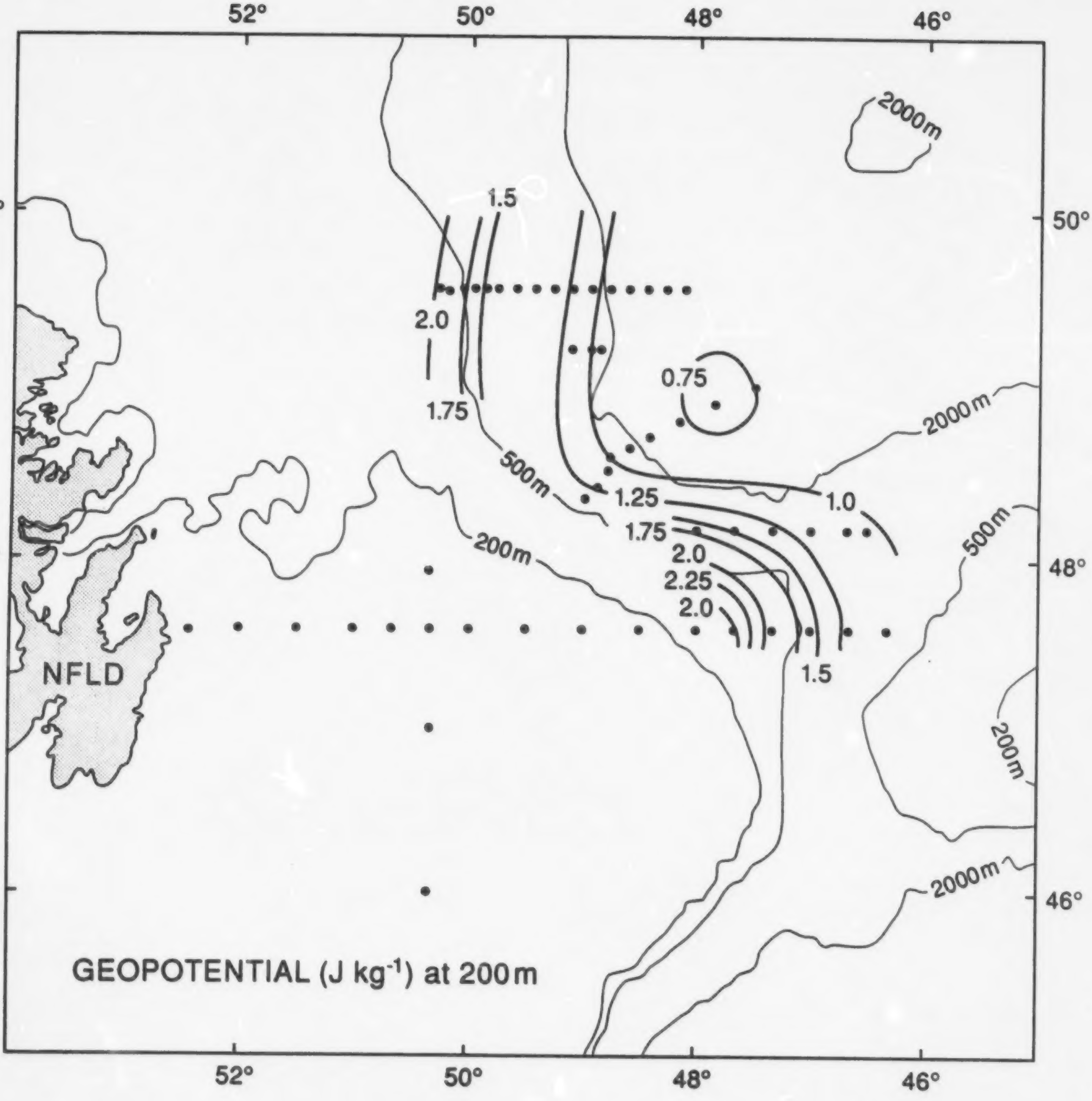

52°
50°
48°
46°
50°
48°
46°
2000m
2000m
200m
500m
500m
200m
2000m
NFLD
26.6
26.6
27.4
27.6
27.0
27.2
26.8
26.8
26.8
27.4
σT AT 100m

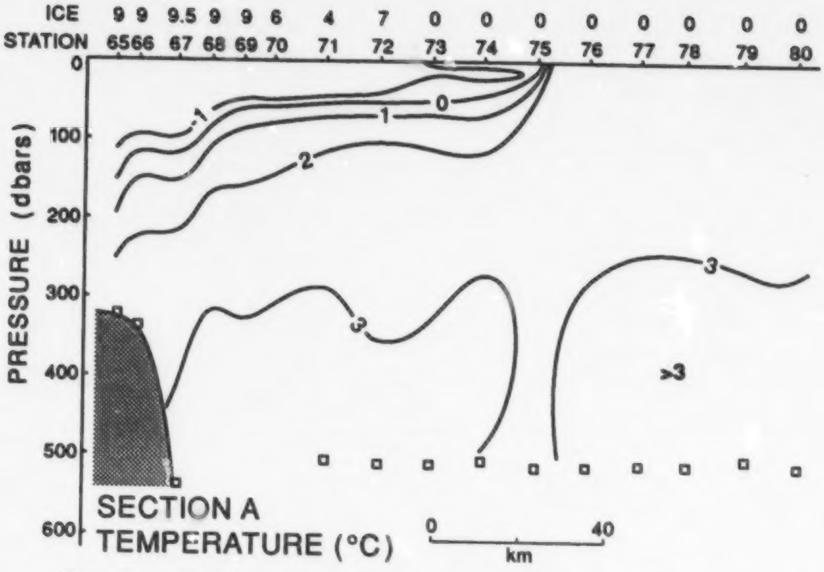

52°
50°
48°
46°
50°
48°
46°
2000m
500m
27.6
27.4
27.2
27.2
200m
NFLD
500m
200m
27.6
2000m
σT AT 200m

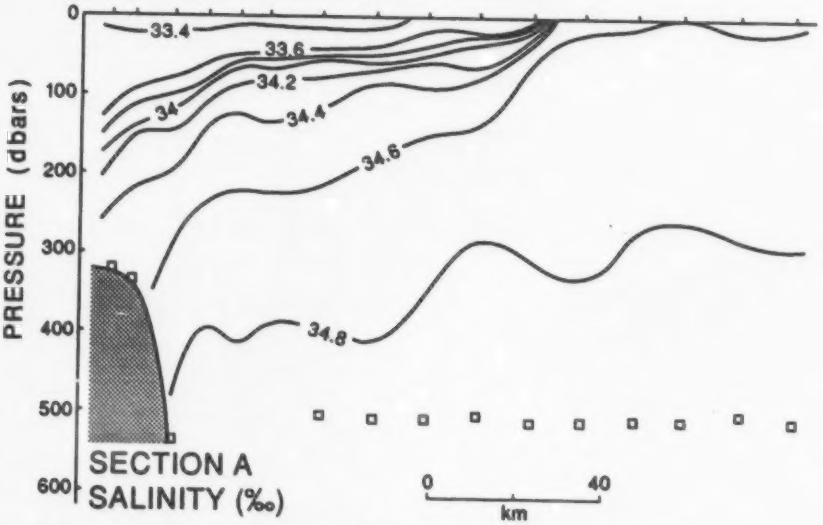

52°
50°
48°
46°
50°
48°
46°
50°
48°
46°
2000m
2000m
500m
0.2
0.2
0.25
200m
500m
NFLD
200m
2000m
GEOPOTENTIAL (J kg⁻¹) AT 20m
52°
50°
48°
46°

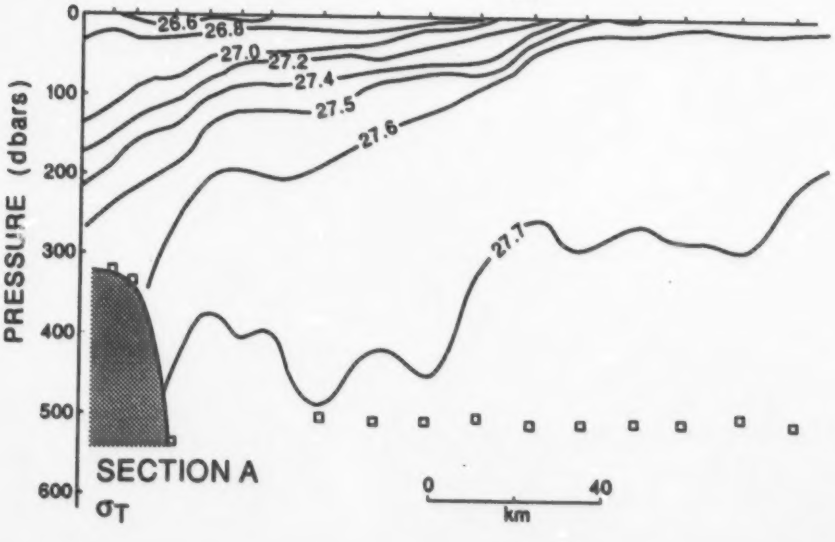

52°
50°
48°
46°
50°
48°
46°
2000m
2000m
500m
0.25
0.25
0.5
500m
200m
-0.75
NFLD
200m
2000m
GEOPOTENTIAL (J kg-1) AT 40m

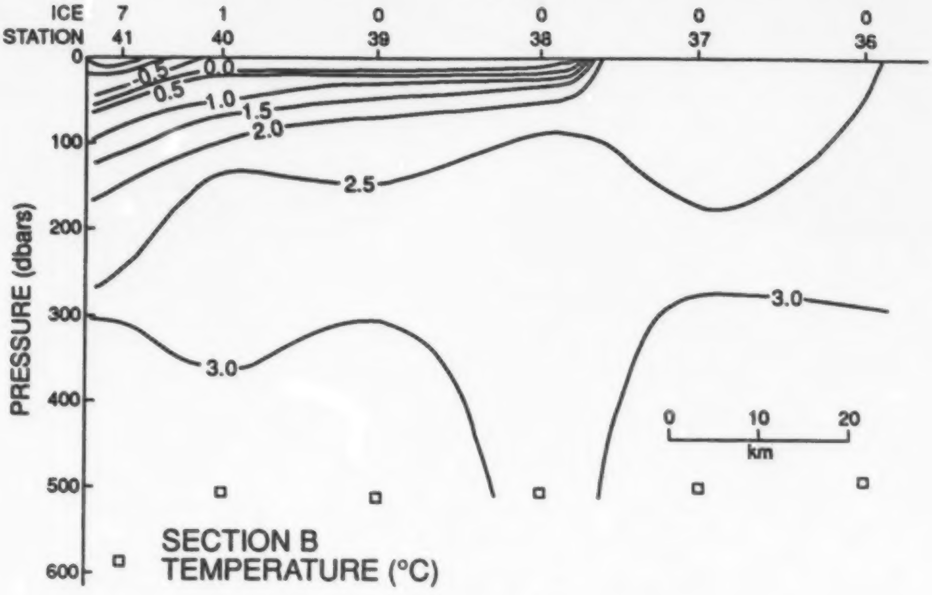

52°
50°
48°
46°
2000m
50°
50°
1.25
0.5
0.5
0.75
1
2000m
200m
500m
48°
1.5
-1.5
500m
48°
NFLD
200m
46°
2000m
46°
GEOPOTENTIAL (J kg-1) AT 100m
52°
50°
48°
46°


52°
50°
48°
46°
50°
48°
46°
2000m
1.5
2.0
1.75
0.75
2000m
500m
1.25
1.0
1.75
2.0
2.25
2.0
1.5
200m
500m
NFLD
200m
2000m
GEOPOTENTIAL (J kg-1) at 200m

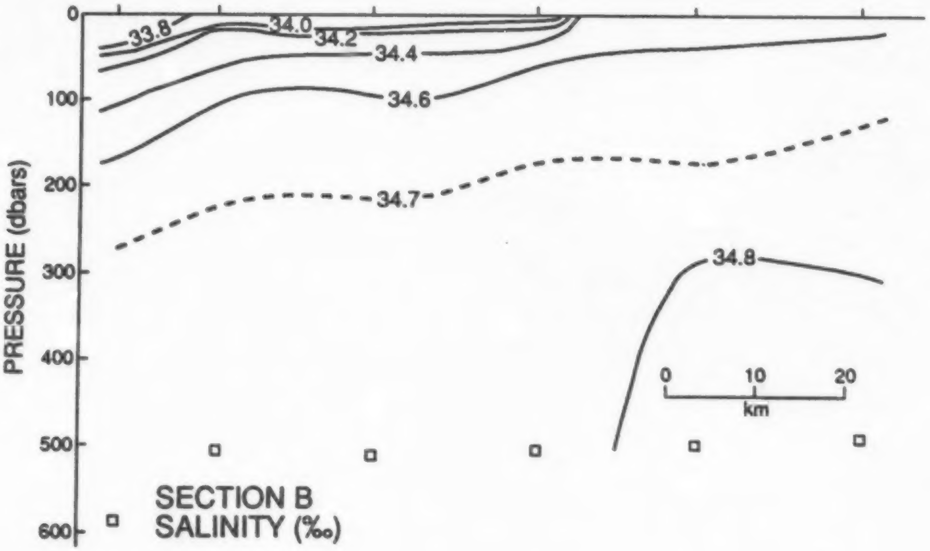

ICE
9 9 9.5 9 9 6 4 7 0 0 0 0 0 0 0 0
STATION
65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
PRESSURE (dbars)
0
100
200
300
400
500
600
-1
0
1
2
3
3
3
>3
SECTION A
TEMPERATURE (°C)
0
40
km


PRESSURE (dbars)
0
100
200
300
400
500
600
33.4
33.6
34
34.2
34.4
34.6
34.8
SECTION A
SALINITY (‰)
0
40
km

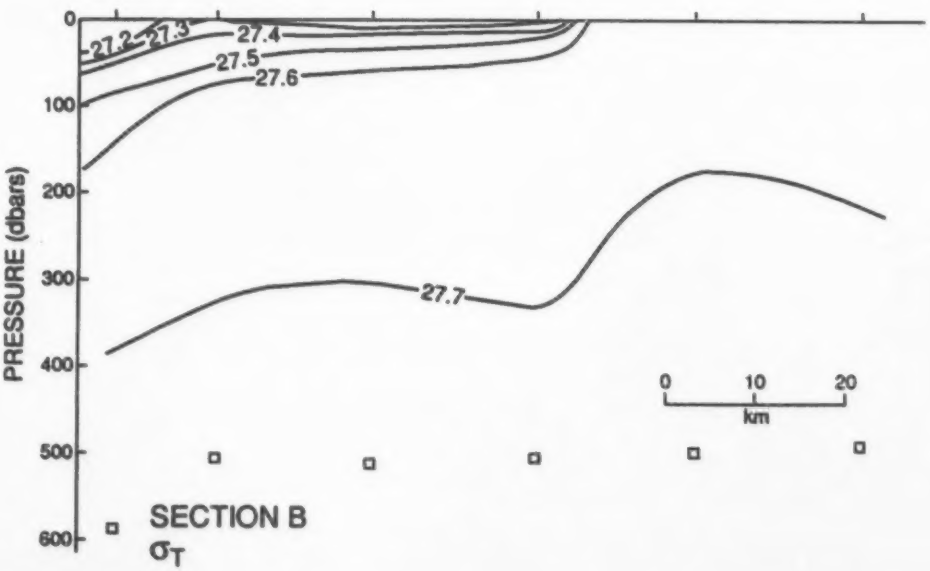

PRESSURE (dbars)
0
100
200
300
400
500
600
26.6
26.8
27.0
27.2
27.4
27.5
27.6
27.7
SECTION A
σT
0
40
km



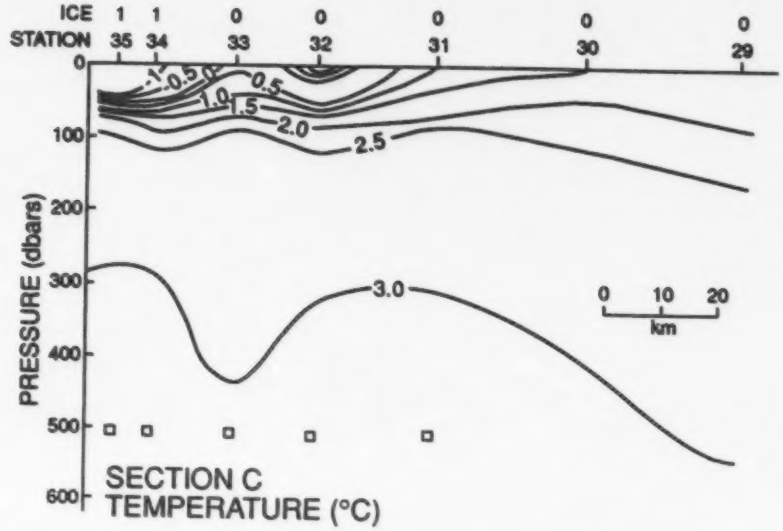
SECTION B
TEMPERATURE (°C)

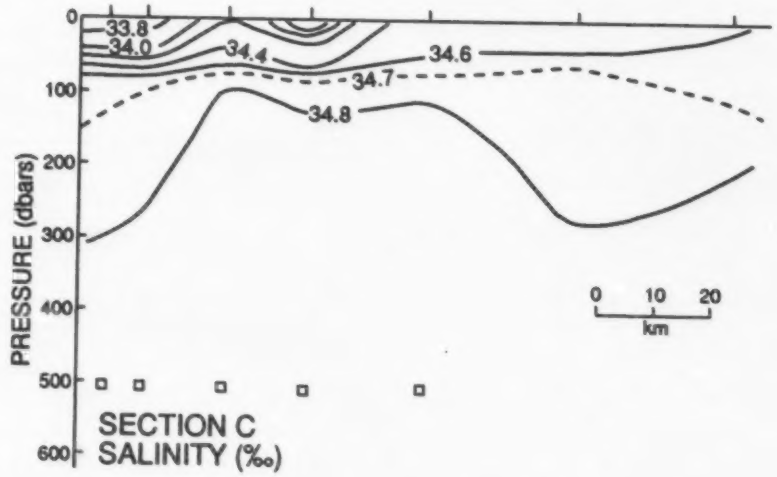


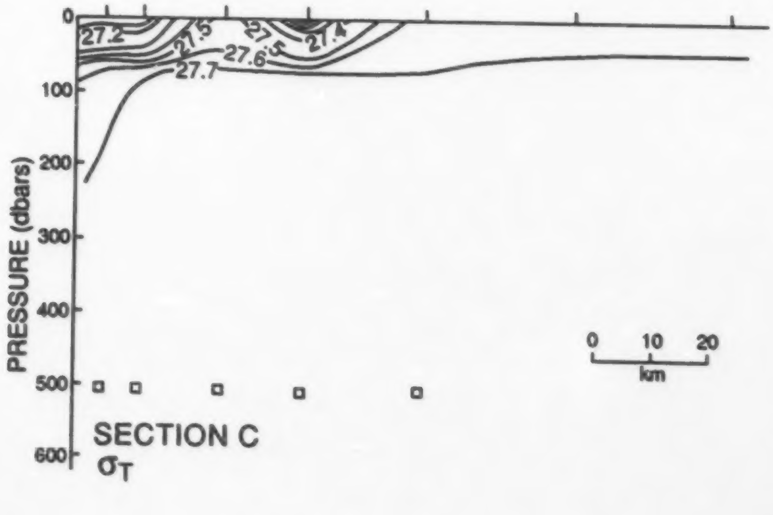
SECTION B
SALINITY (‰)

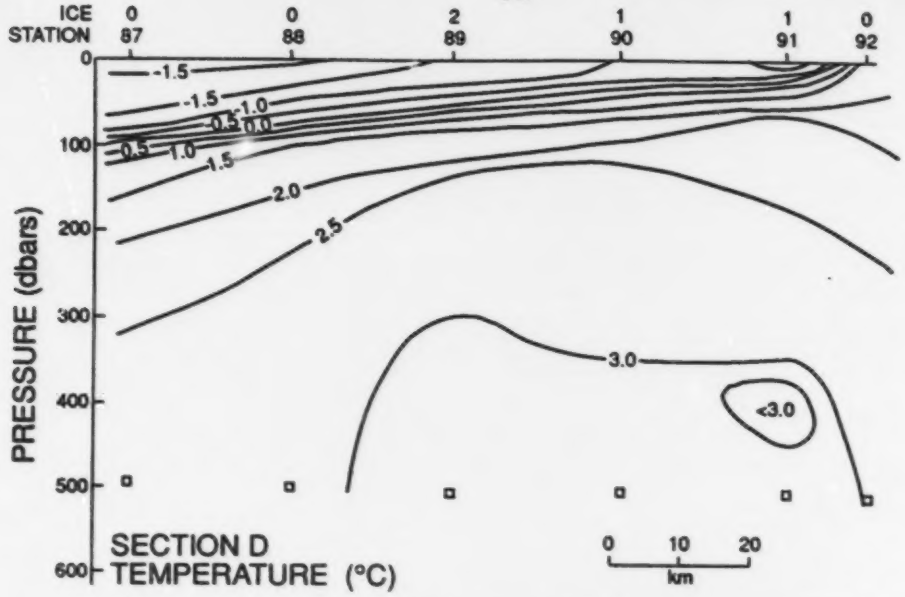


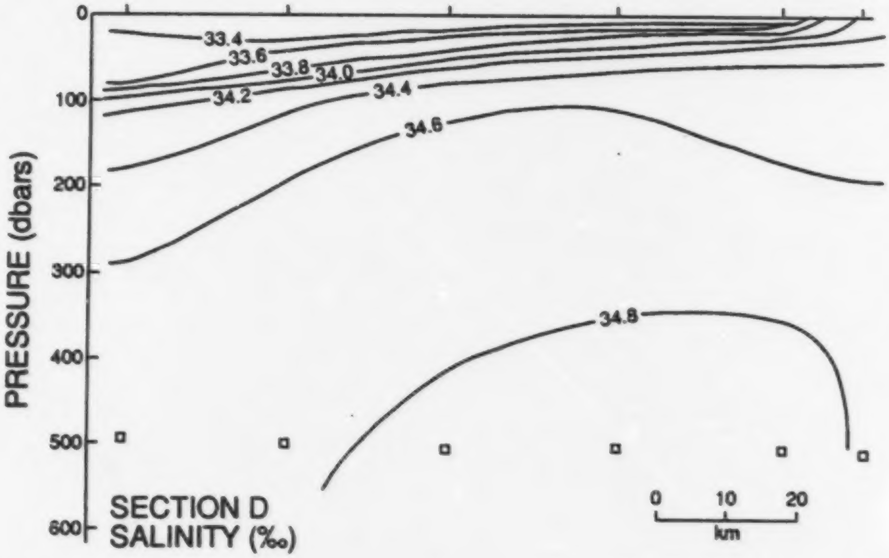
SECTION B
σ_T

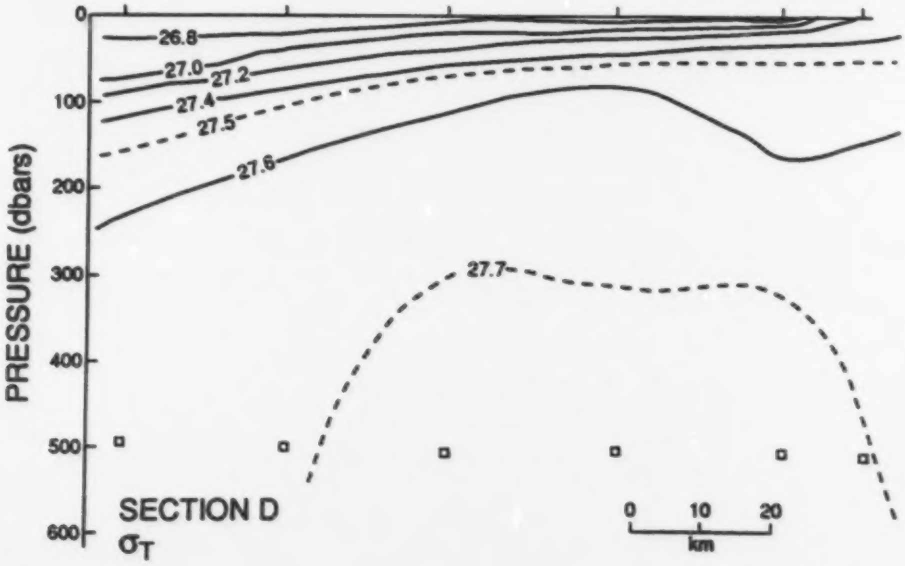

ICE
1
1
0
0
0
0
0
STATION
35
34
33
32
31
30
29
PRESSURE (dbars)
0
100
200
300
400
500
600
-1
-0.5
0
0.5
1.0
1.5
2.0
2.5
3.0
0
10
20
km
SECTION C
TEMPERATURE (°C)

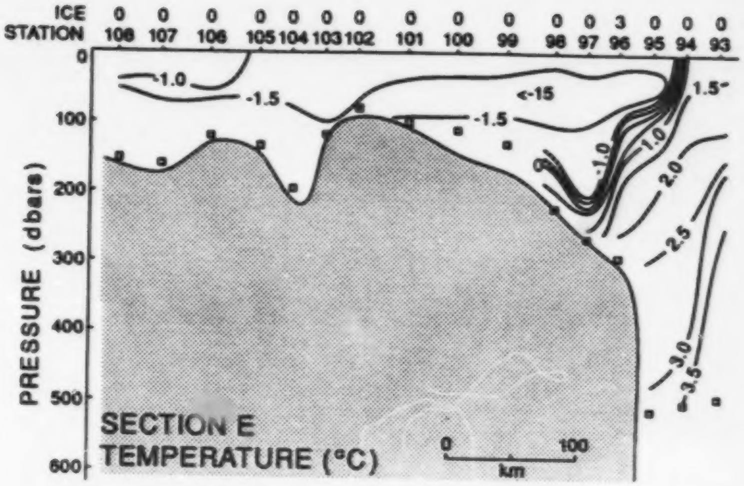

PRESSURE (dbars)
0
100
200
300
400
500
600
33.8
34.0
34.4
34.6
34.7
34.8
0
10
20
km
SECTION C
SALINITY (‰)

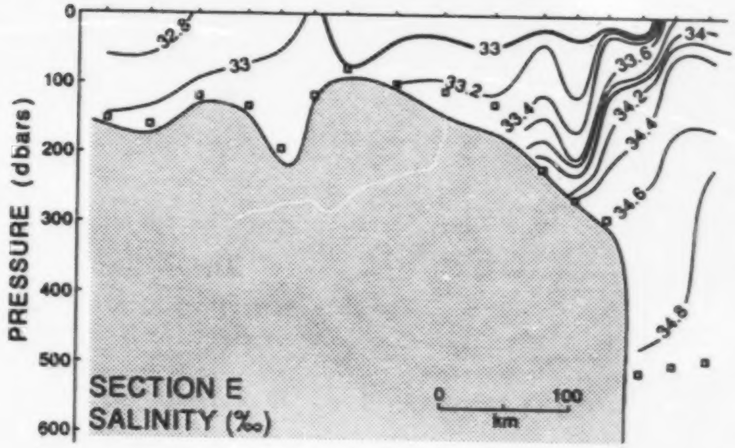

PRESSURE (dbars)
0
100
200
300
400
500
600
27.2
27.5
27.5
27.4
27.6
27.7
0
10
20
km
SECTION C
σT

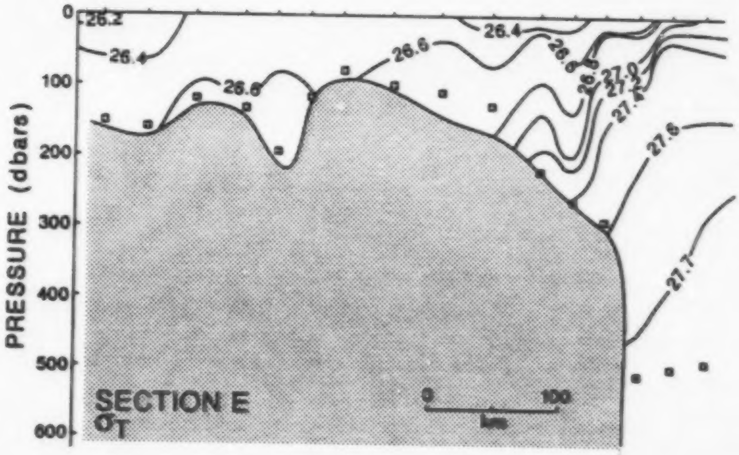

ICE
STATION
0
87
0
88
2
89
1
90
1
91
0
92
-1.5
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
<3.0
PRESSURE (dbars)
0
100
200
300
400
500
600
SECTION D
TEMPERATURE (°C)
0
10
20
km

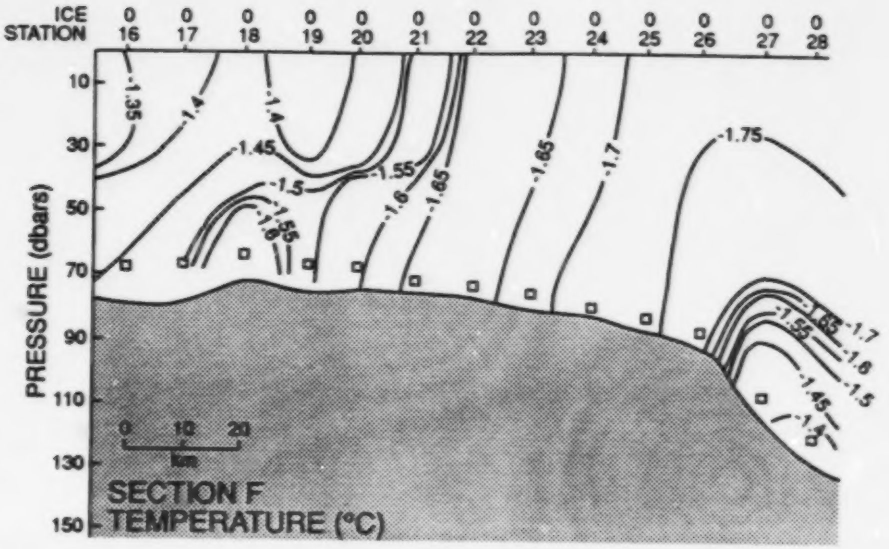

33.4
33.6
33.8
34.0
34.2
34.4
34.6
34.8
PRESSURE (dbars)
0
100
200
300
400
500
600
SECTION D
SALINITY (‰)
0
10
20
km

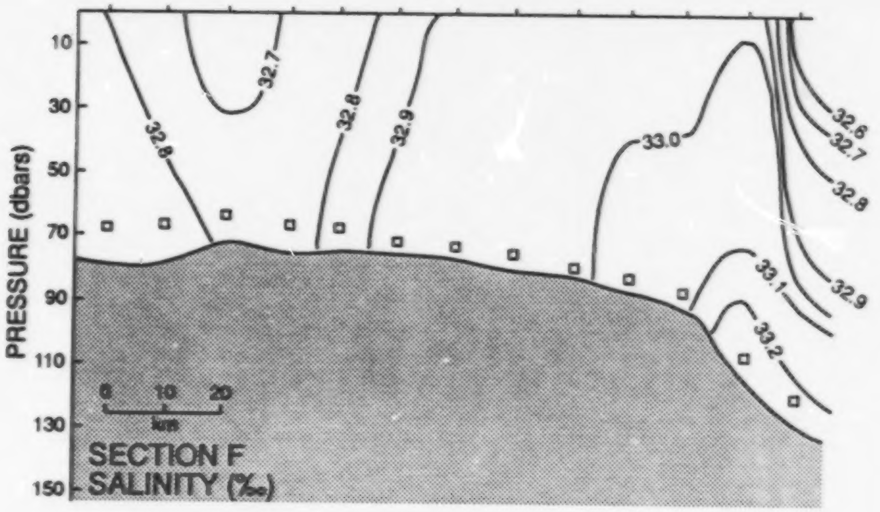

26.8
27.0
27.2
27.4
27.5
27.6
27.7
PRESSURE (dbars)
0
100
200
300
400
500
600
SECTION D
σT
0
10
20
km

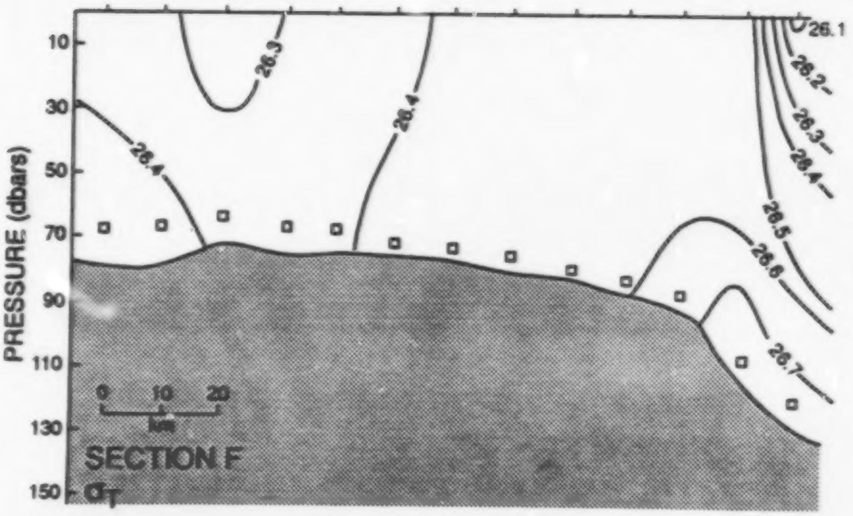

ICE 0 0 0 0 0 0 0 0 0 0 0 0 3 0 0 0
STATION 108 107 106 105 104 103 102 101 100 99 98 97 96 95 94 93
PRESSURE (dbars)
0
100
200
300
400
500
600
-1.0
-1.5
<-1.5
-1.5
1.5
0
-1.0
1.0
2.0
2.5
3.0
3.5
SECTION E
TEMPERATURE (°C)
0
100
km

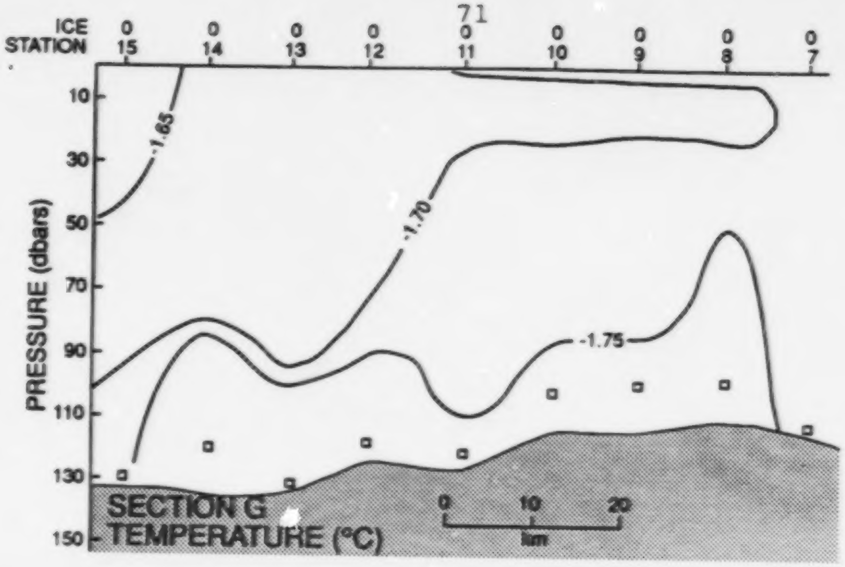

PRESSURE (dbars)
0
100
200
300
400
500
600
32.8
33
33
33.2
33.4
33.6
34
34.2
34.4
34.6
34.8
SECTION E
SALINITY (‰)
0
100
km

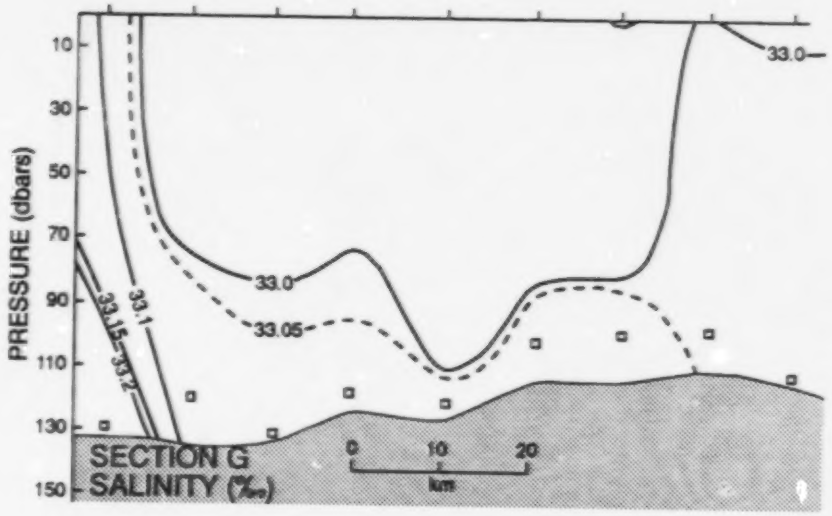

PRESSURE (dbars)
0
100
200
300
400
500
600
26.2
26.4
26.6
26.6
26.4
26.8
26.8
27.0
27.2
27.4
27.6
27.7
SECTION E
σ_T
0
100
km

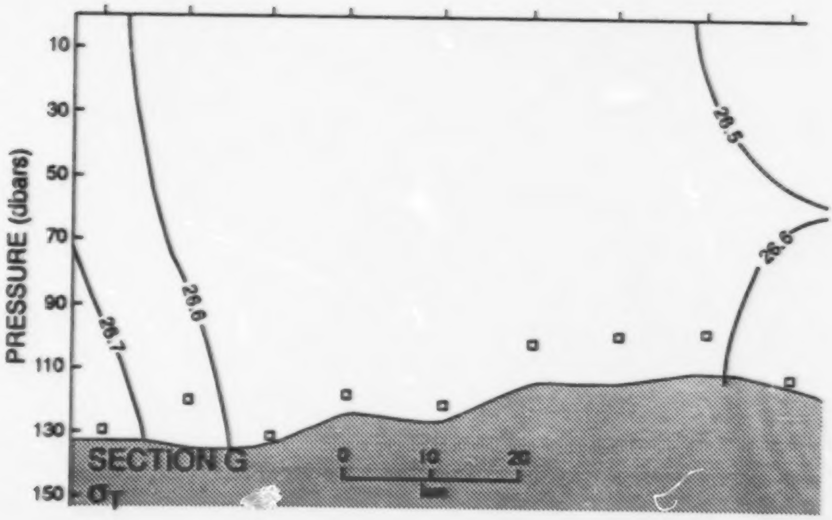

ICE
STATION
0 0 0 0 0 0 0 0 0 0 0 0 0
16 17 18 19 20 21 22 23 24 25 26 27 28
PRESSURE (dbars)
10
30
50
70
90
110
130
150
-1.35
-1.4
-1.4
-1.45
-1.5
-1.55
-1.6
-1.65
-1.65
-1.7
-1.75
-1.7
-1.6
-1.5
-1.45
-1.4
0 10 20
km
SECTION F
TEMPERATURE (°C)


PRESSURE (dbars)
10
30
50
70
90
110
130
150
32.8
32.7
32.8
32.9
33.0
32.6
32.7
32.8
32.9
33.1
33.2
0 10 20
km
SECTION F
SALINITY (‰)


PRESSURE (dbars)
10
30
50
70
90
110
130
150
26.3
26.4
26.4
26.1
26.2
26.3
26.4
26.5
26.6
26.7
0 10 20
km
SECTION F
σ_T


ICE
STATION
0 0 0 0 0 0 0 0 0
15 14 13 12 11 10 9 8 7
PRESSURE (dbars)
10
30
50
70
90
110
130
150
-1.65
-1.70
-1.75
SECTION G
TEMPERATURE (°C)
0 10 20
km


PRESSURE (dbars)
10
30
50
70
90
110
130
150
33.0
33.0
33.05
33.1
33.15
33.2
SECTION G
SALINITY (‰)
0 10 20
km


PRESSURE (dbars)
10
30
50
70
90
110
130
150
26.5
26.6
26.6
26.7
SECTION G
σT
0 10 20
km

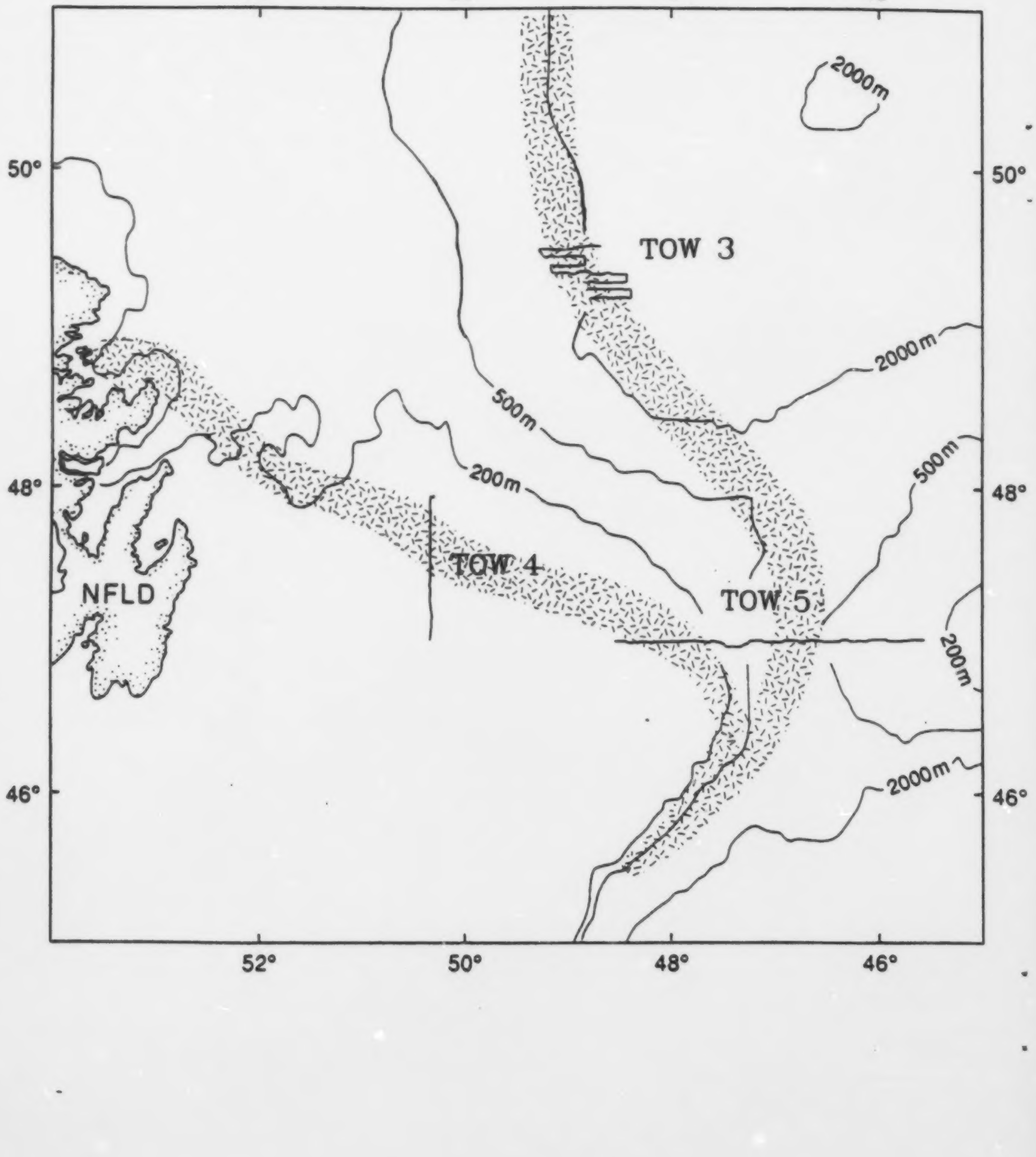
4. Small-scale temperature-salinity structure

4.1 Batfish tows

Five Batfish tows were conducted, but only the last three yielded useful data. A map given the locations of the tows is shown in p. 74. A summary of the data is given in p. 75. The shaded area indicate the approximate ice edge position at the end of March.

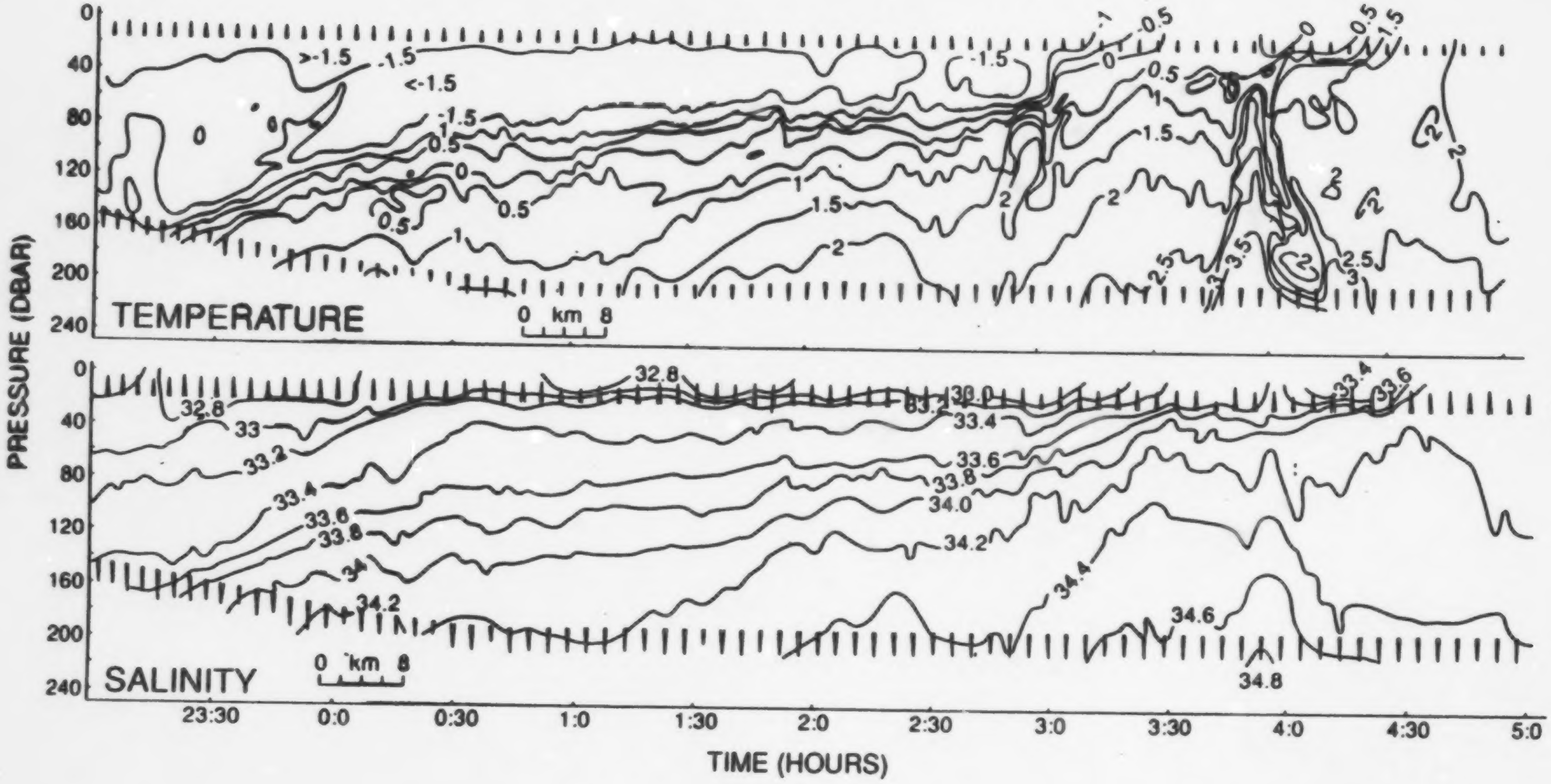
4.2 Temperature and salinity sections for tow 5

Because of the large amount of the Batfish data, only a small part of data is shown in this atlas. P. 76 shows the temperature and salinity for a segment of Tow 5 (highlighted portion of Tow 5 in p. 16). The spikes on the top and bottom parts of the panels are truncated Batfish traces.


52°
50°
48°
46°
50°
48°
46°
TOW 3
TOW 4
TOW 5
NFLD
2000m
2000m
2000m
500m
500m
200m
200m

Batfish tows

Tow No.	Start	End
3	April 5 (day 95) 49°32.22'N 18:47:38 48°41.16'W	April 6 (day 96) 49°12.91'N 12:34:34 48°49.99'W
4	April 10 (day 100) 47°55.85'N 03:21:51 50°18.60'W	April 10 (day 100) 46°59.80'N 10:34:56 50°21.00'W
5	April 10 (day 100) 47°00.00'N 18:42:19 48°30.13'W	April 11 (day 101) 47°00.00'N 09:18:38 45°28.90'W


TEMPERATURE
SALINITY
PRESSURE (DBAR)
TIME (HOURS)
0
40
80
120
160
200
240
23:30
0:0
0:30
1:0
1:30
2:0
2:30
3:0
3:30
4:0
4:30
5:0
0 km 8
>-1.5
-1.5
<-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
32.8
33
33.2
33.4
33.6
33.8
34
34.0
34.2
34.4
34.6
34.8

5. Ice drift

5.1 Deployment of ice beacons

A total of six ice beacons were deployed on ice by a helicopter. The times and places of deployment (the "Start" column) and the last data point (the "End" column) are given in p. 78 . One of the beacon, # 4457, is equipped with an anemometer which measures wind speed and direction at 2 m from the ice surface.

The beacons data were transmitted to shore via the ARGOS satellite system. The winds were measured in the first ten minute of each hour, and the mean values of the 10 minutes were recorded. The position data give the latitudes and longitudes of the beacons at the time of the satellite passes. Approximately 14 positions were obtained every day.

5.2 Drift track

P. 79 shows the drift tracks of all six beacons on ice. P. 80 to p. 85 show the tracks of the individual ice beacons. The solid (dotted) portions of the track indicate the beacon is on ice (in water). The transition from ice to water was detected from the record of ice surface temperature when a sudden rise of temperature from below 0°C to above freezing occurred.

5.3 Wind velocity and ice velocity

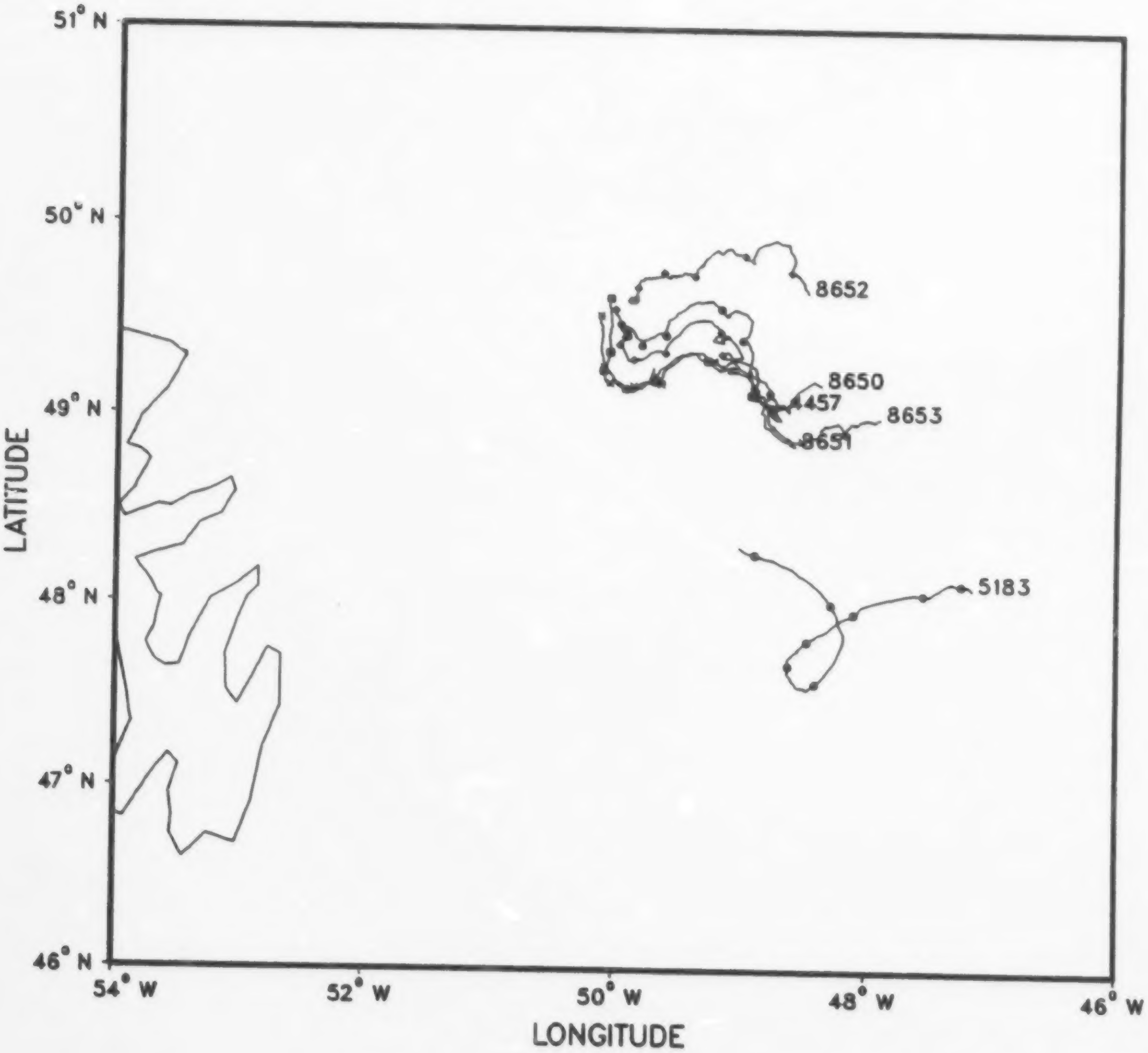
Wind data from the anemometer on beacon # 4457 are shown in p. 86 to p. 87. In both the plots, the true North is in the positive-y direction. The wind data record ended on day 101.

From the ice beacon positions, hourly ice velocities were calculated. One-day averages of the hourly ice velocities at given times are shown in p. 88 to p. 116. The vector plots represent the velocity of the drifting ice.

Summary of ice beacons

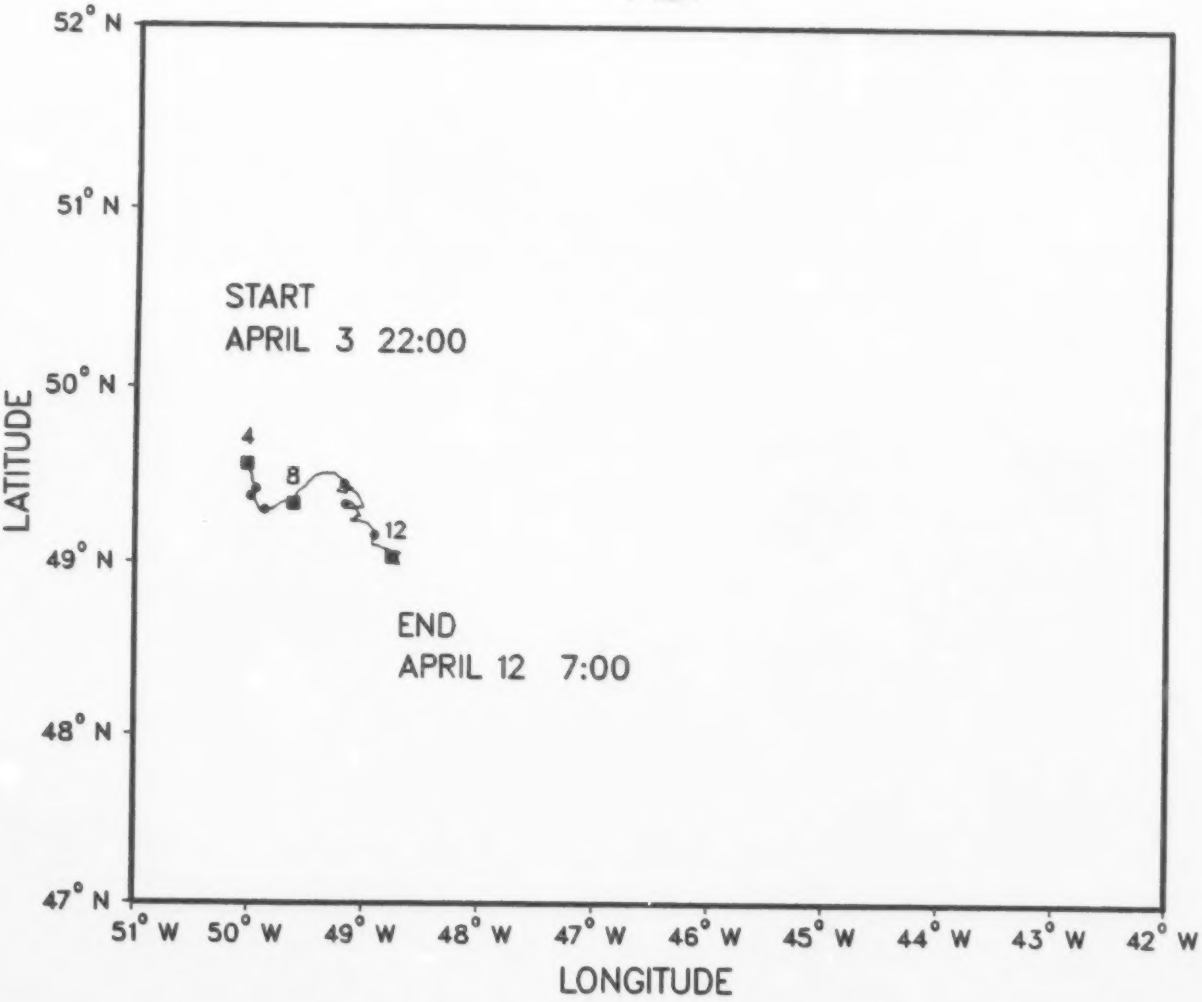
Ice beacon	Start		End	
4457	April 3 (day 93) Time (UTC) 19:47 (deployment)	49°35.78'N 49°59.56'W	April 10 (day 100) 21:11 on ice April 12 (day 102) 07:00 in water	49°03.48'N 48°38.94'W
5183	April 30 (day 89) 18:00 (data)	48°20.16'N 49°04.56'W	April 7 (day 97) 09:00 on ice April 12 (day 101) 12:54 on fishing boat	46°44.88'N 46°35.88'W
8650	April 3 (day 93) Time (UTC) 18:43 (deployment)	49°30.54'N 49°57.79'W	April 12 (day 107) 18:07 on ice April 29 (day 119) 22:00 in water	49°52.92'N 46°34.50'W
8651	April 3 (day 93) Time (UTC) 18:58 (deployment)	49°41.16'N 50°01.40'W	April 10 (day 100) 22:00 on ice	48°51.12'N 48°33.66'W
8652	April 3 (day 93) Time (UTC) 19:20 (deployment)	49°36.82'N 49°51.64'W	April 10 (day 100) 09:50 on ice April 29 (day 119) 23:00 in water	50°51.24'N 46°10.92'W
8653	April 3 (day 93) Time (UTC) 19:02 (deployment)	49°35.02'N 50°06.35'W	April 7 (day 97) 11:00 on ice April 29 (day 119) 22:00 in water	50°44.16'N 42°52.38'W

TRAJECTORIES OF BEACONS ON ICE


51° N
50° N
49° N
48° N
47° N
46° N
LATITUDE
54° W
52° W
50° W
48° W
46° W
LONGITUDE
8652
8650
457
8653
8651
5183

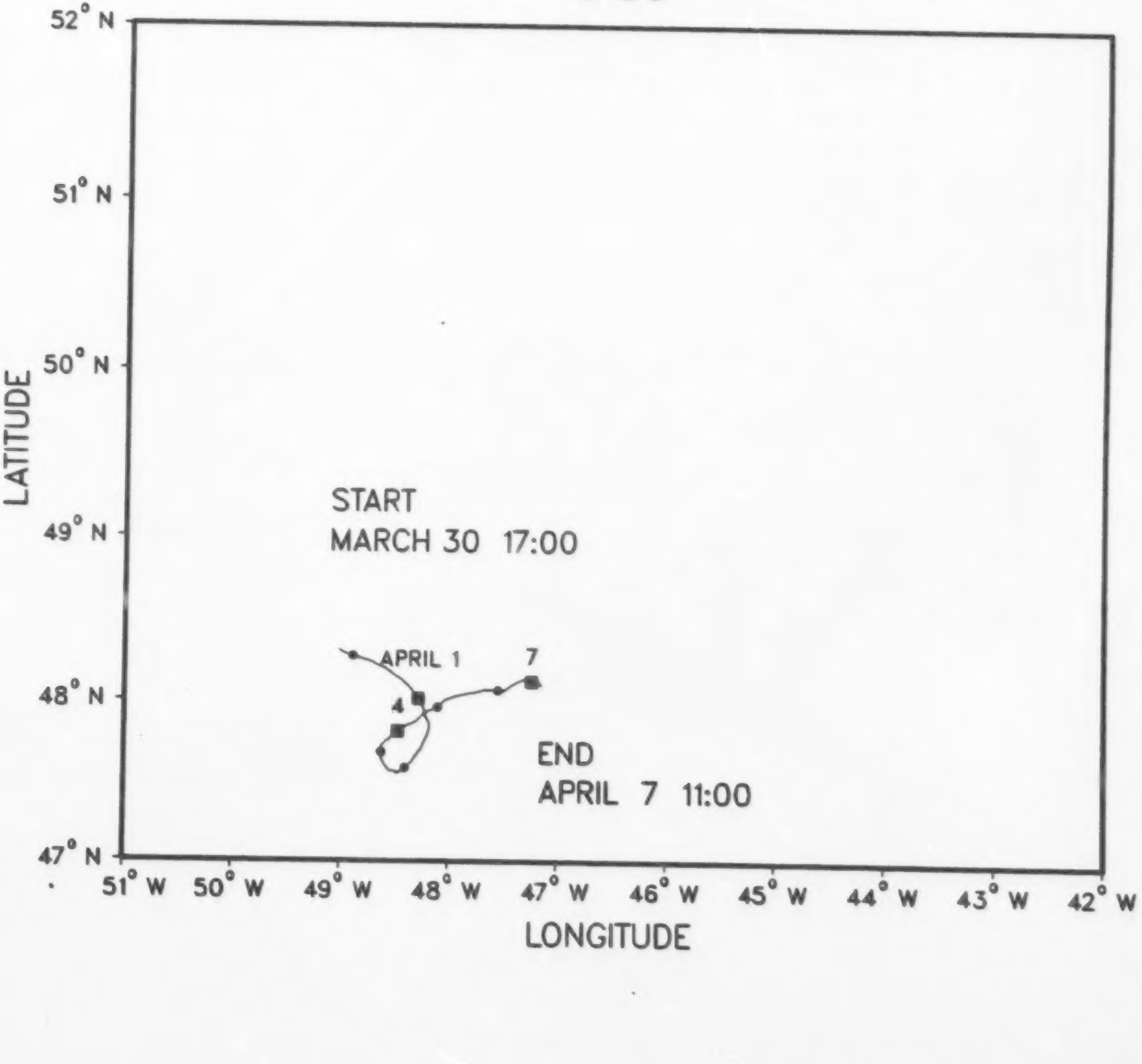
BEACON TRAJECTORY

4457


52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
START
APRIL 3 22:00
4
8
12
END
APRIL 12 7:00
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE

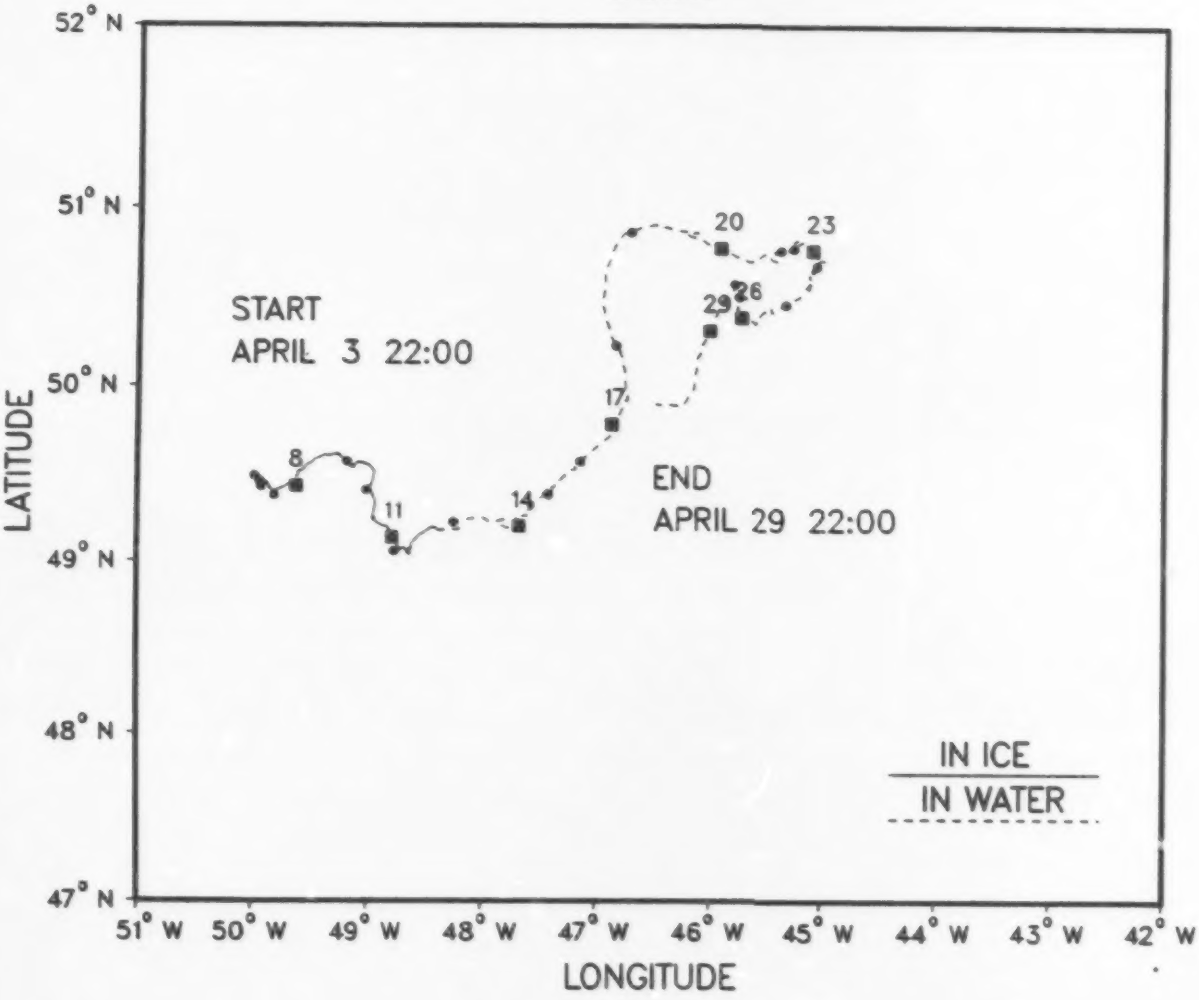
BEACON TRAJECTORY

5183


52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
START
MARCH 30 17:00
APRIL 1
7
4
END
APRIL 7 11:00
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE

BEACON TRAJECTORY

8650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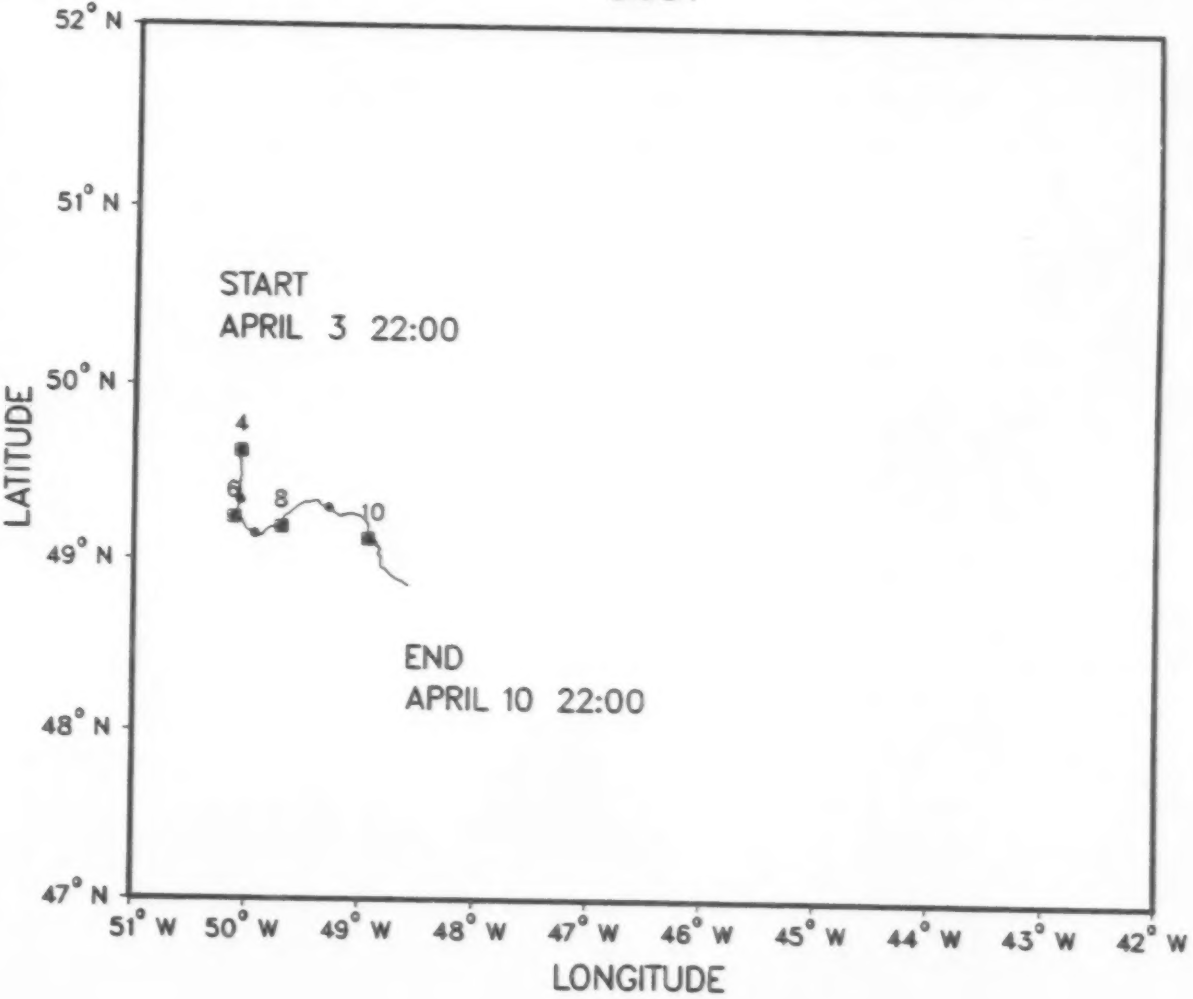
50° N
49° N
48° N
47° N
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
START
APRIL 3 22:00
END
APRIL 29 22:00
8
11
14
17
20
23
26
29
IN ICE
IN WATER

BEACON TRAJECTORY

8651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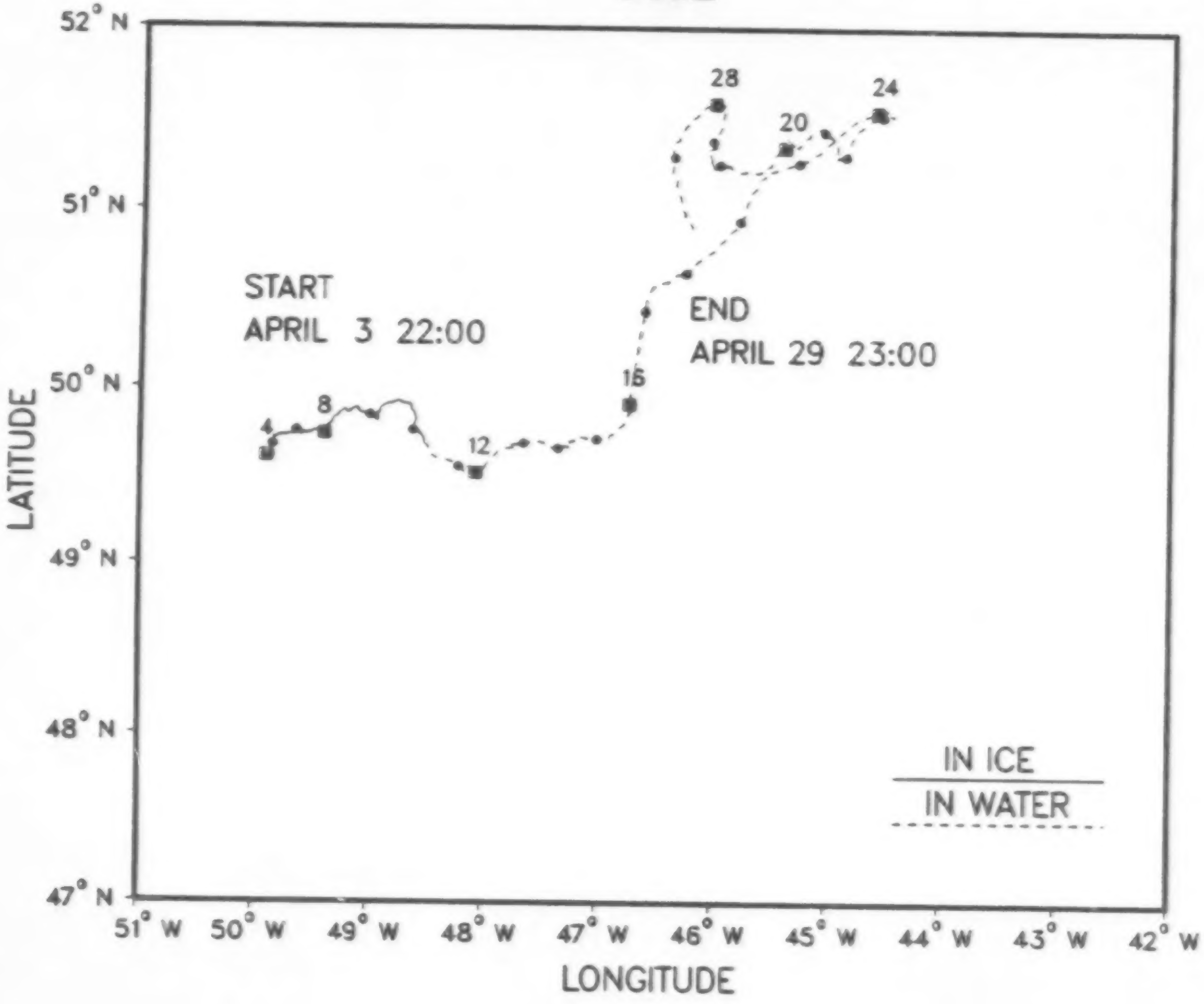
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
START
APRIL 3 22:00
4
6
8
10
END
APRIL 10 22:00

BEACON TRAJECTORY

8652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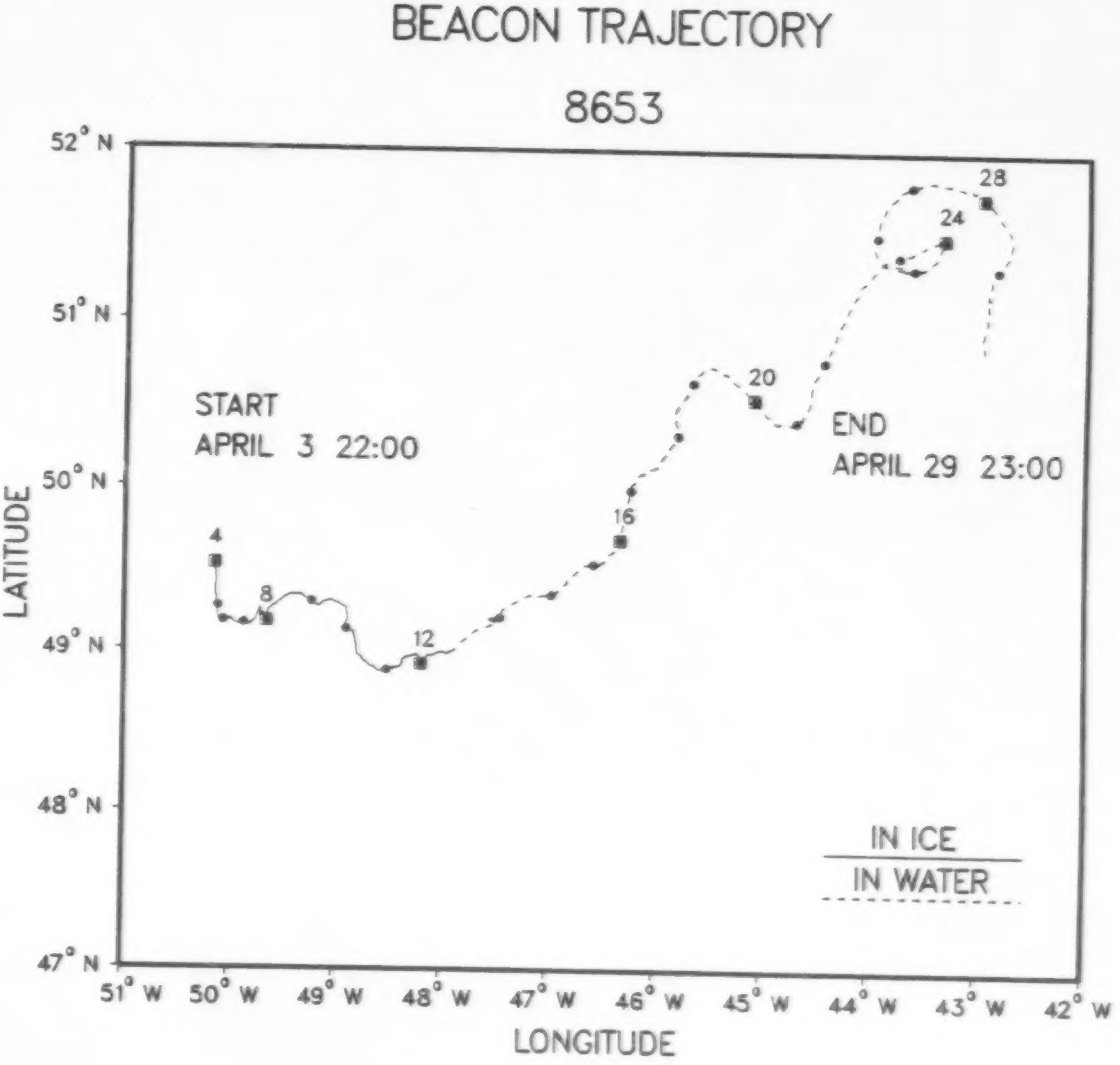
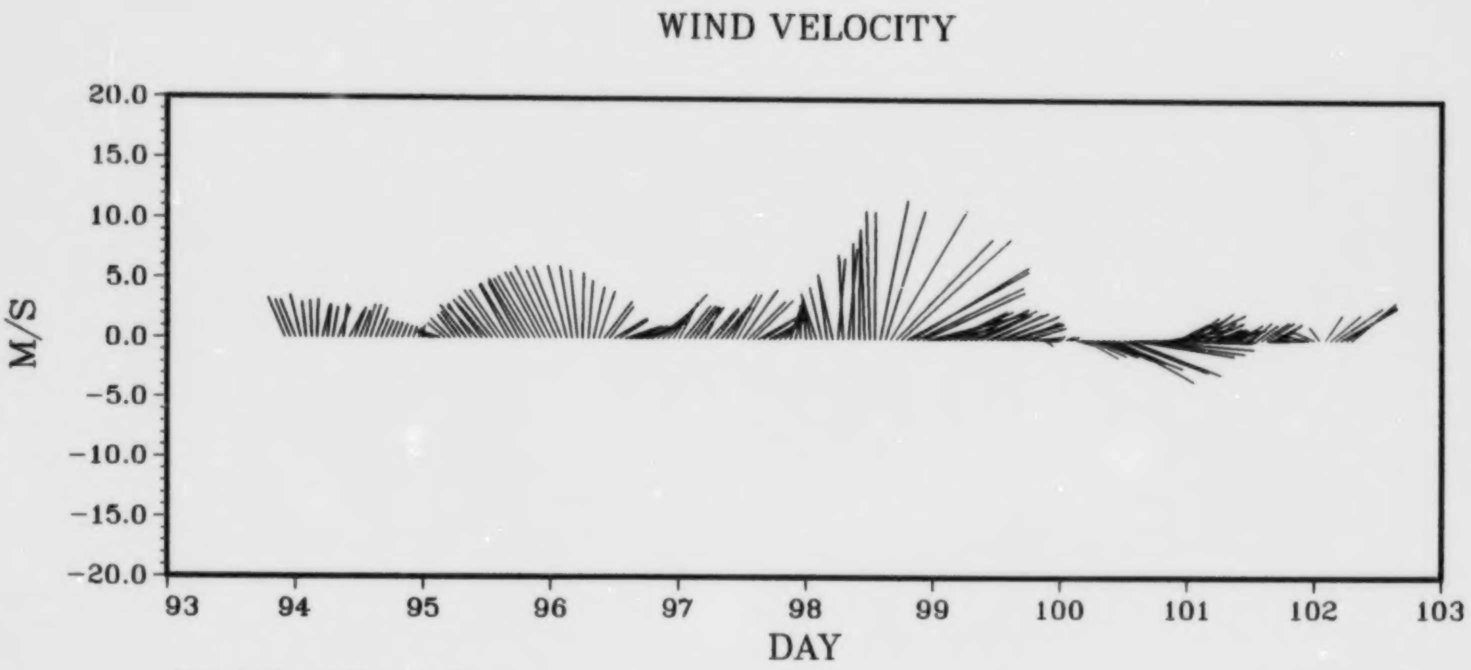
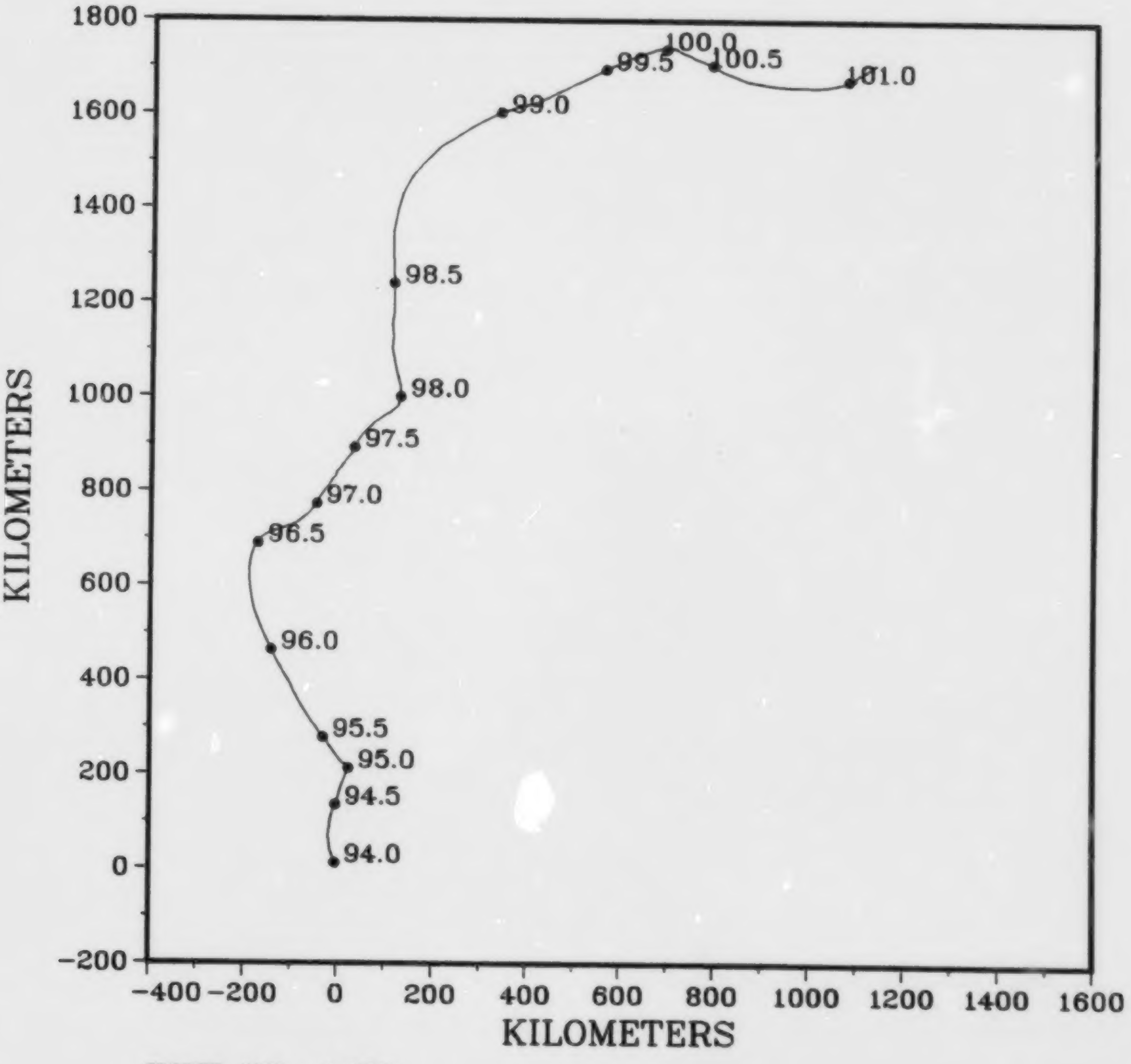
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
START
APRIL 3 22:00
END
APRIL 29 23:00
4
8
12
16
20
24
28
IN ICE
IN WATER


BEACON TRAJECTORY
8653
START
APRIL 3 22:00
END
APRIL 29 23:00
4
8
12
16
20
24
28
IN ICE
IN WATER
52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE

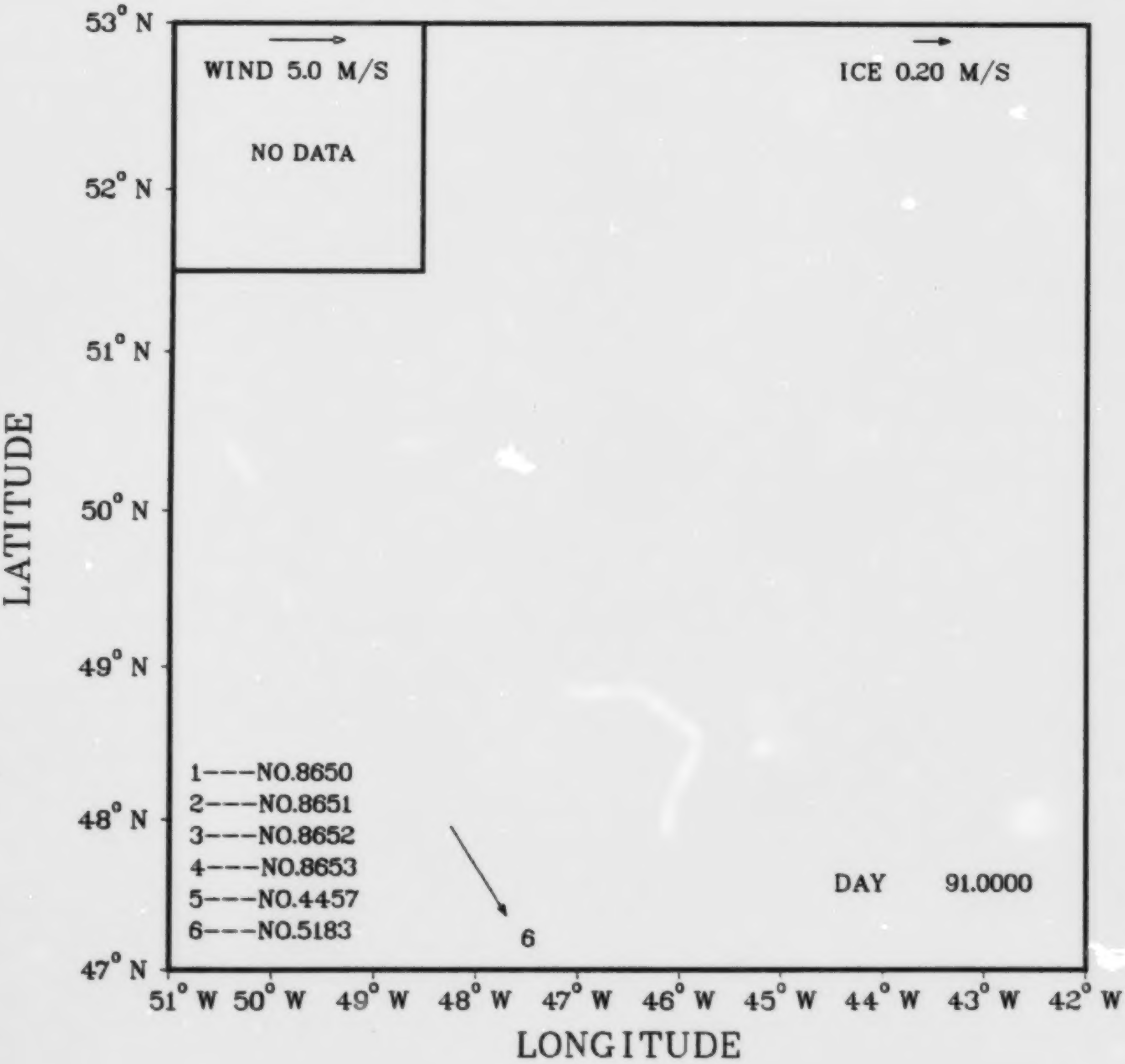


ICE BEACON 4457

WIND (2 METER)



INST. NO.: 4457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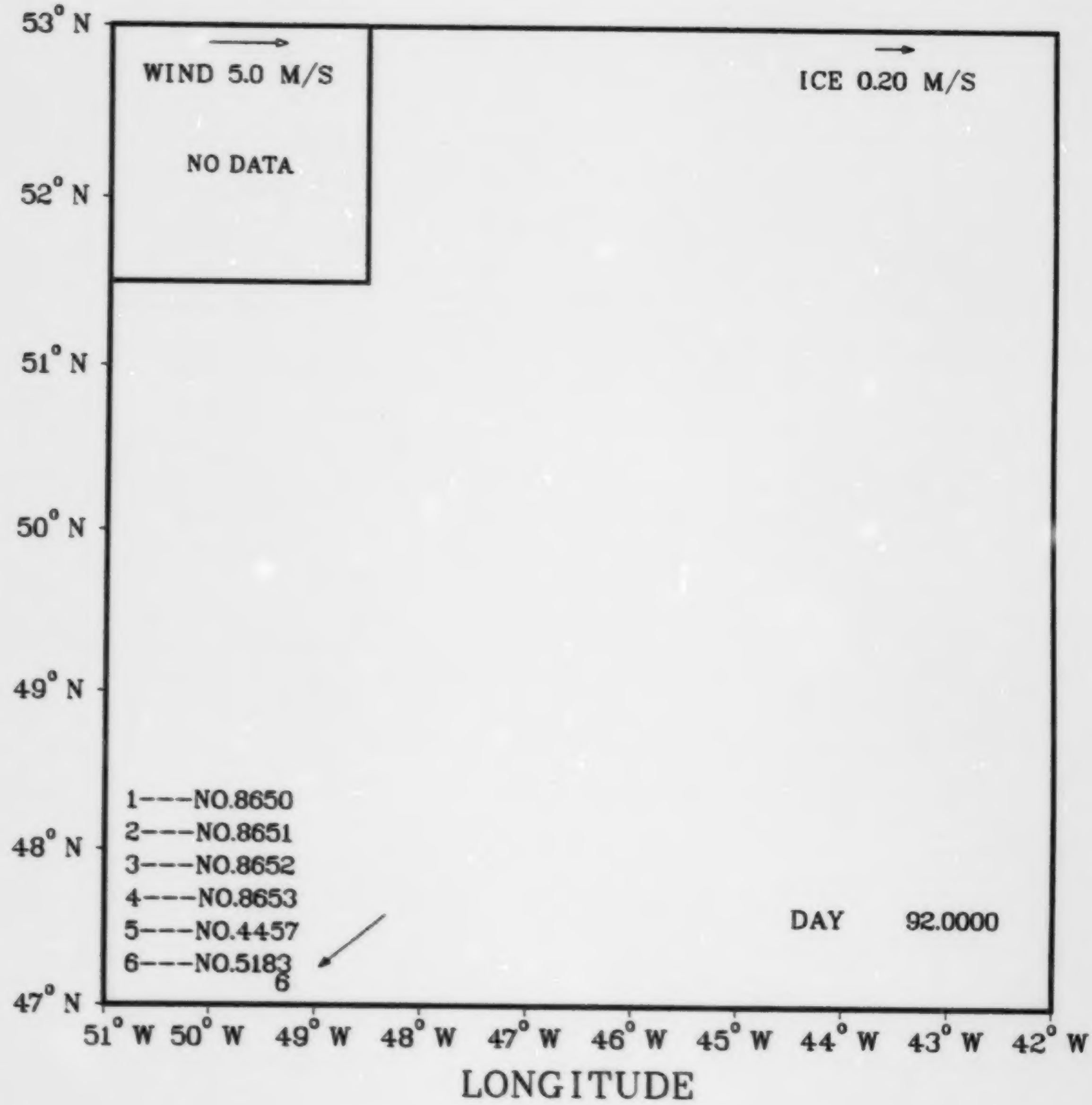
52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
6
DAY 91.0000
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE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48° N
47° N
LATITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
6
DAY 92.0000
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49° W
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47° W
46° W
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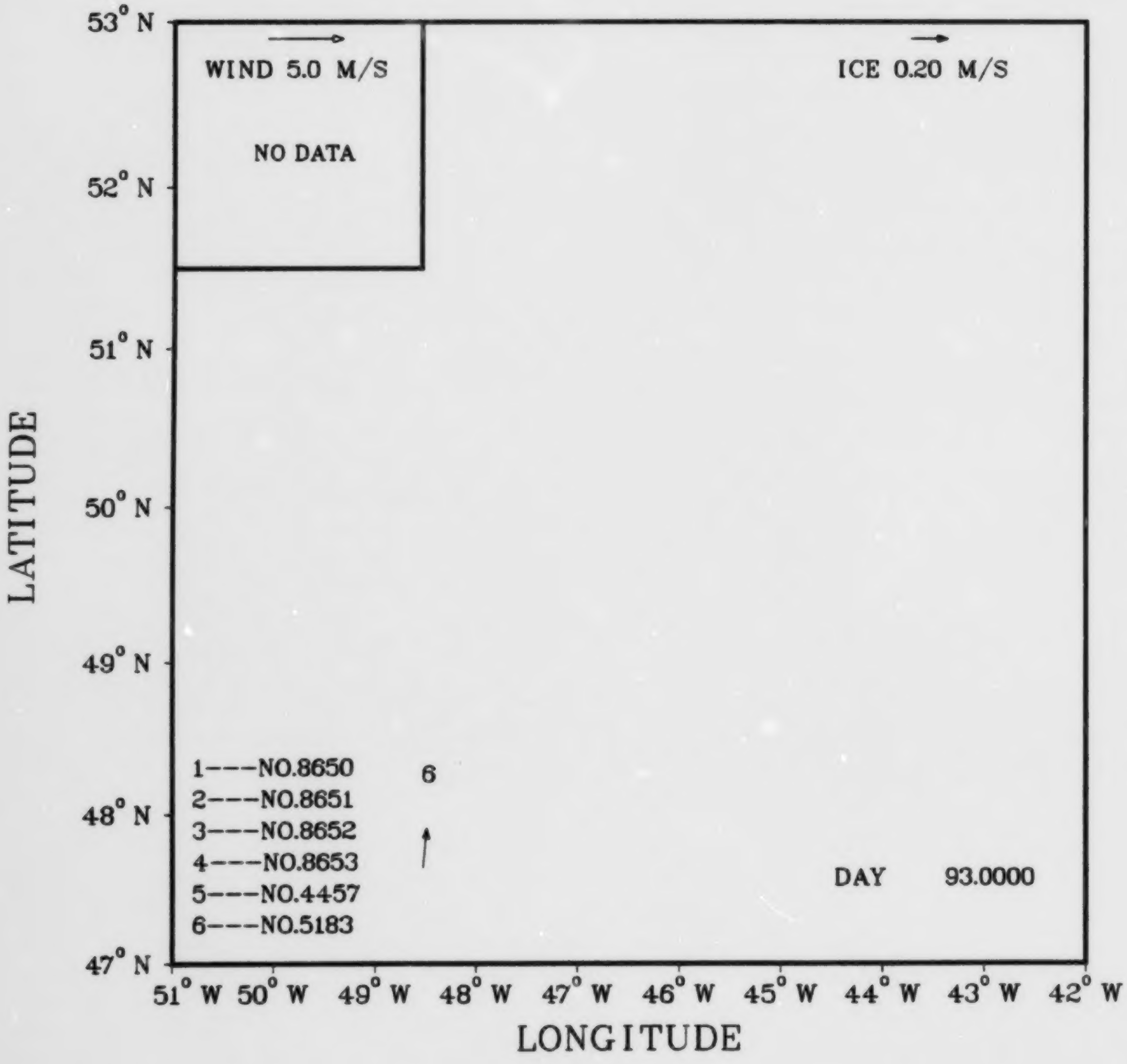
44° W
43° W
42° W
LONGITUDE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47° N
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NO DATA
ICE 0.20 M/S
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
6
DAY 93.0000
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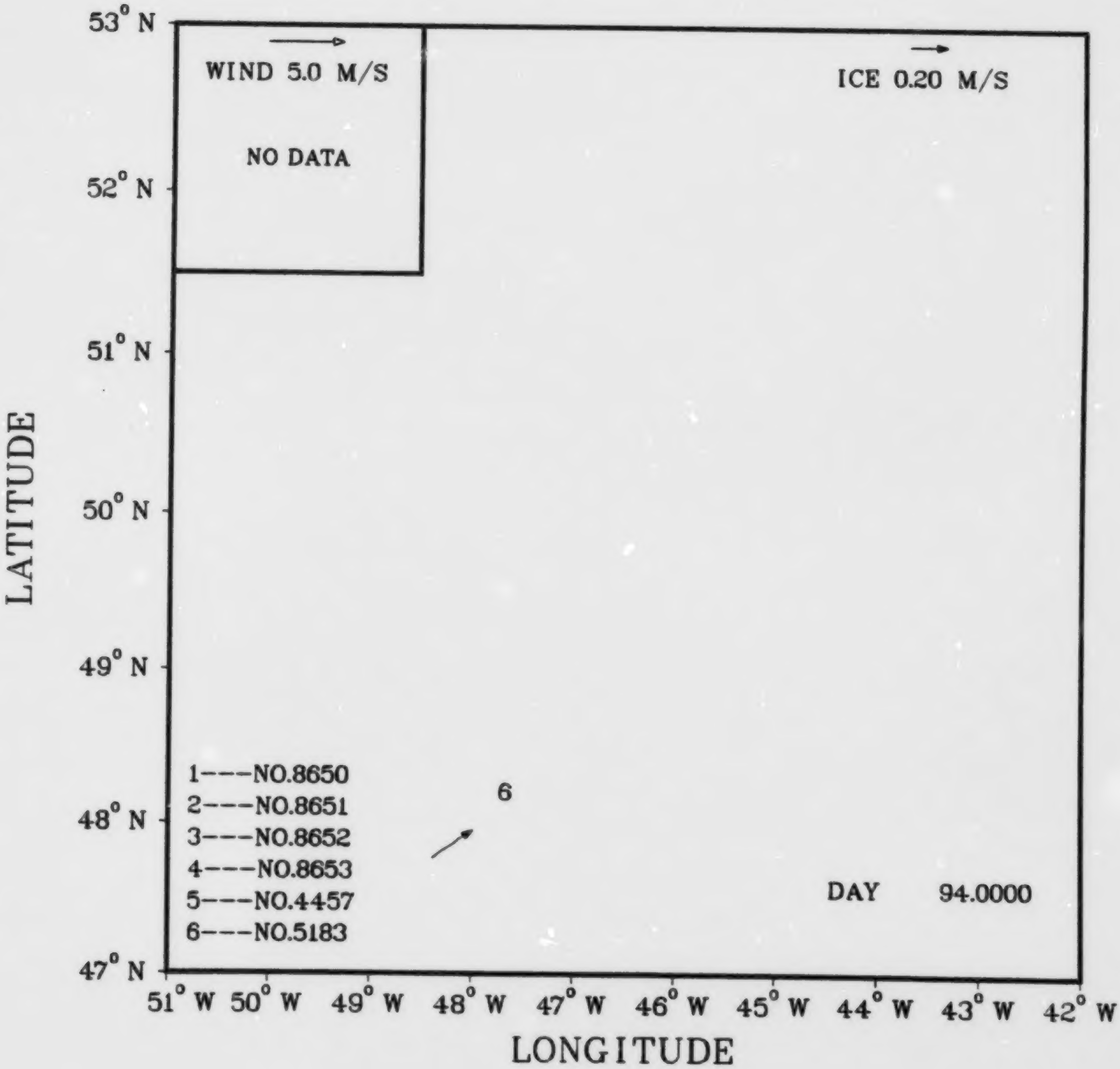
43° W
42° W
LONGITUDE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47° N
LATITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
6
DAY 94.0000
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49° W
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47° W
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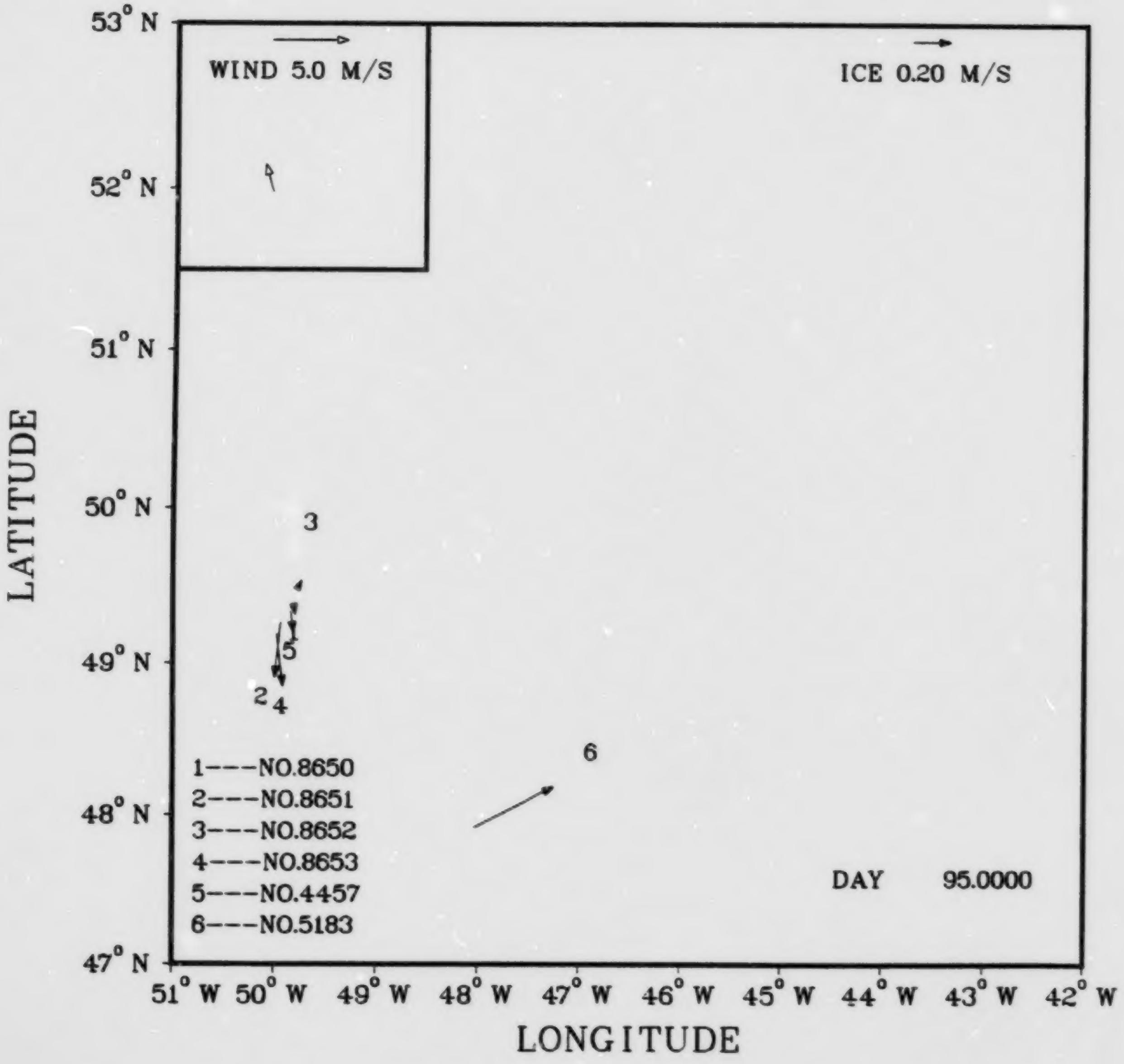
45° W
44° W
43° W
42° W
LONGITUDE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52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
WIND 5.0 M/S
ICE 0.20 M/S
3
5
2
4
6
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 95.0000
51° W
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49° W
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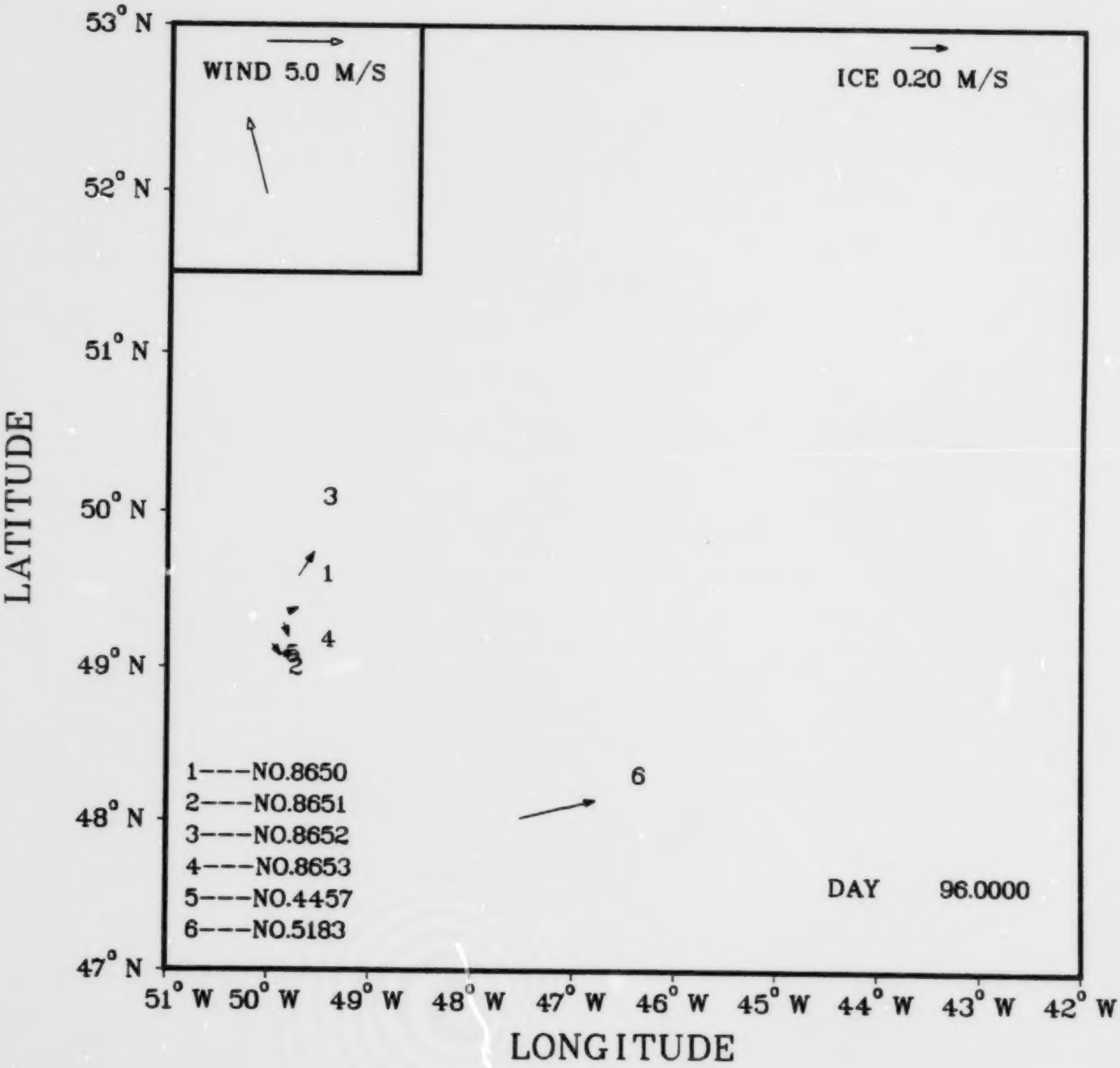
43° W
42° W
LONGITUDE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ICE 0.20 M/S
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51° N
50° N
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48° N
47° N
LATITUDE
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1
4
5
2
6
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 96.0000
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49° W
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47° W
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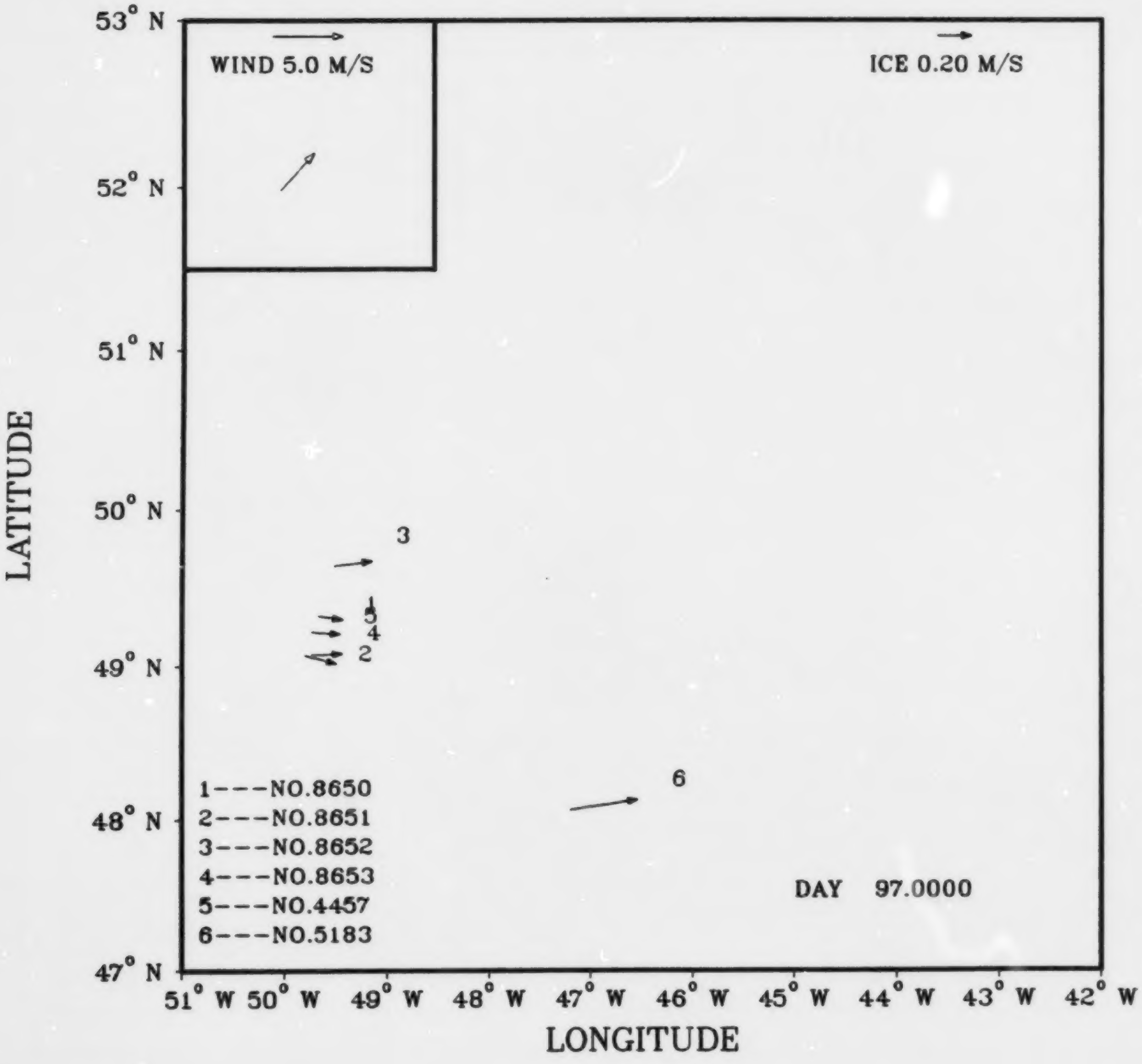
44° W
43° W
42° W
LONGITUDE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ICE 0.20 M/S
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50° N
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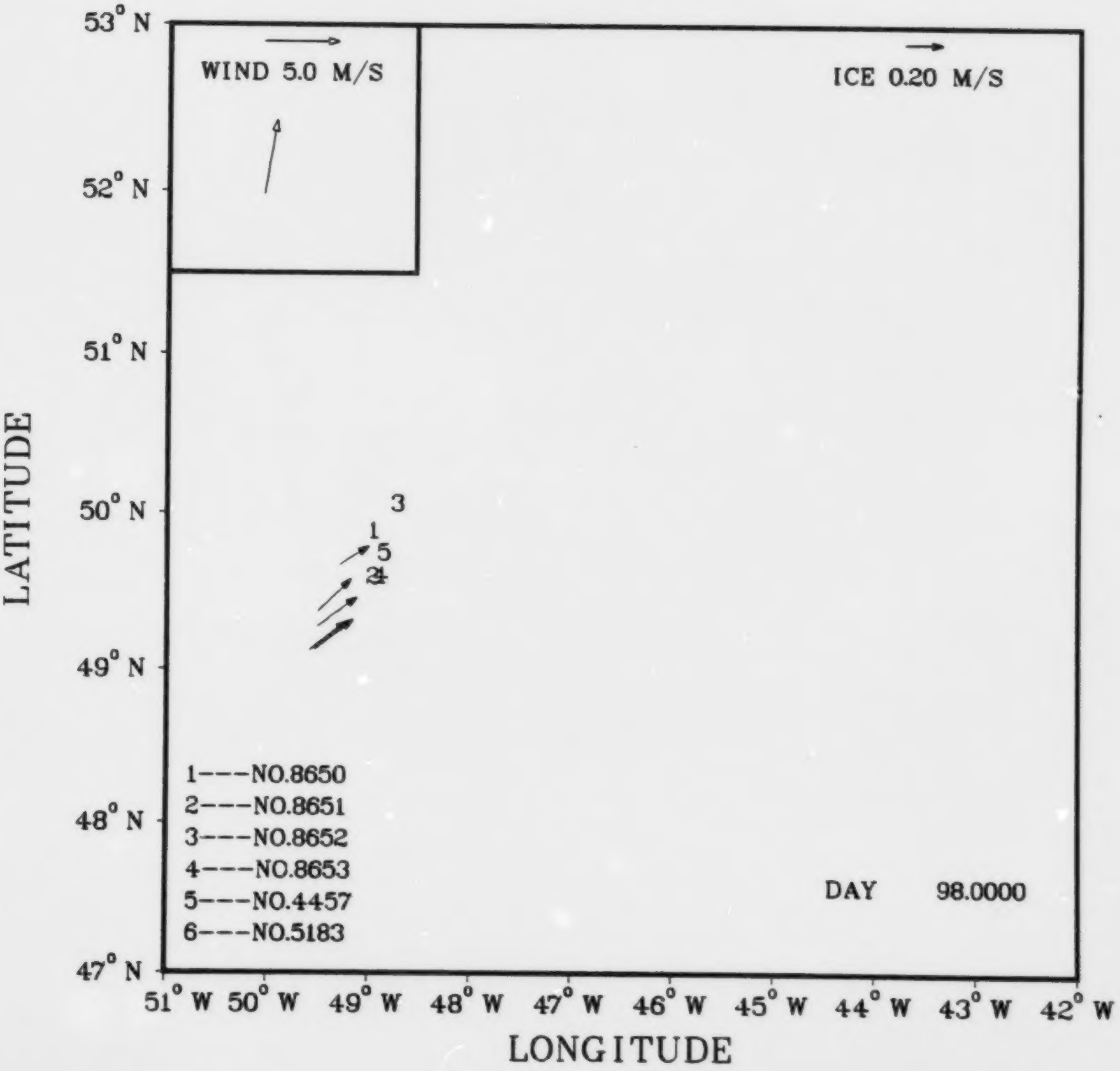
48° N
47° N
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
3
5
4
2
6
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 97.0000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ICE 0.20 M/S
53° N
52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
3
1
5
2
4
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 98.0000
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49° W
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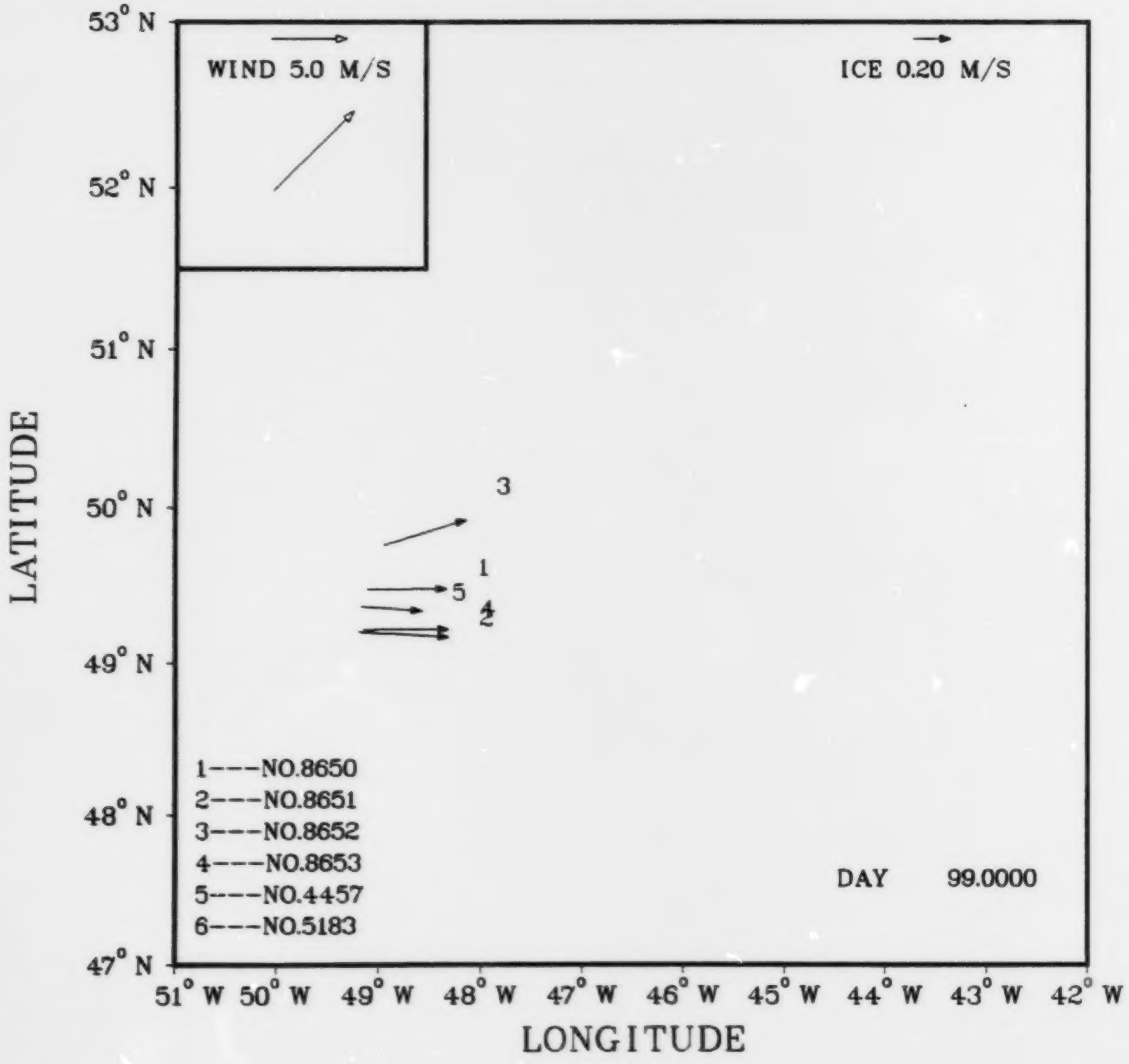
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE


WIND 5.0 M/S
ICE 0.20 M/S
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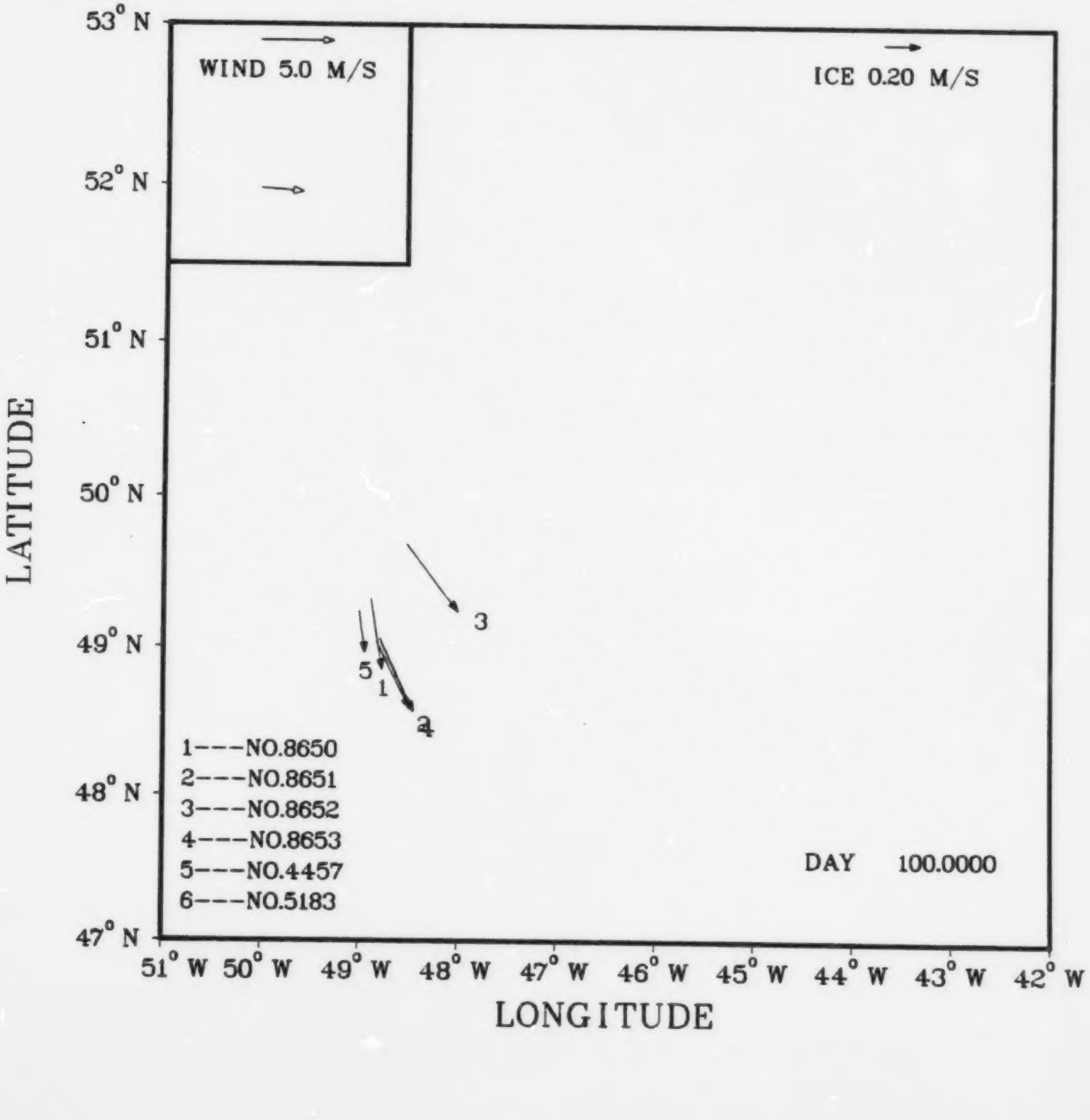
52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
3
1
5
4
2
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 99.0000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ICE 0.20 M/S
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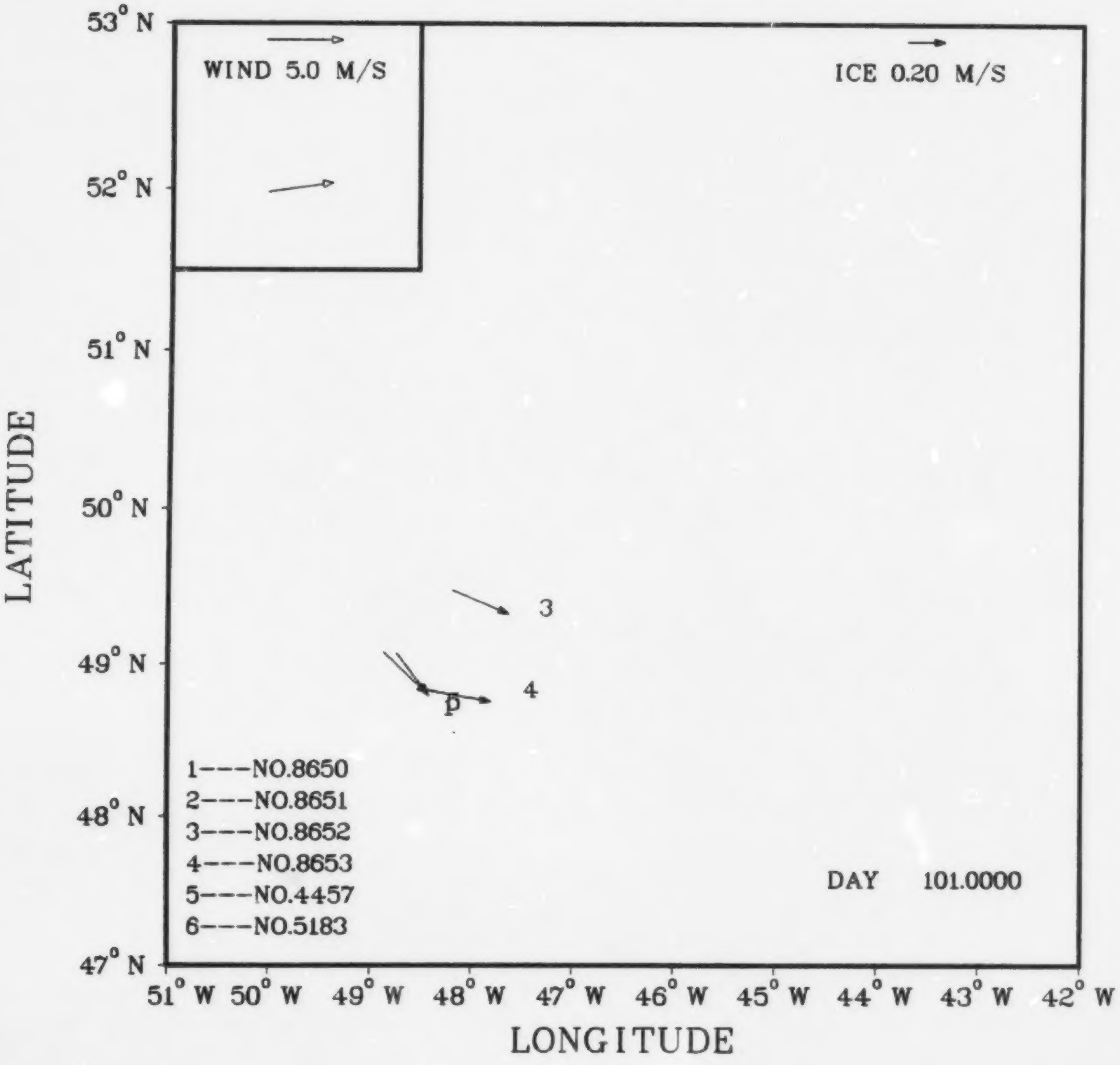
47° N
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
3
5
1
2
4
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 100.0000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ICE 0.20 M/S
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49° N
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47° N
LATITUDE
3
4
5
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 101.0000
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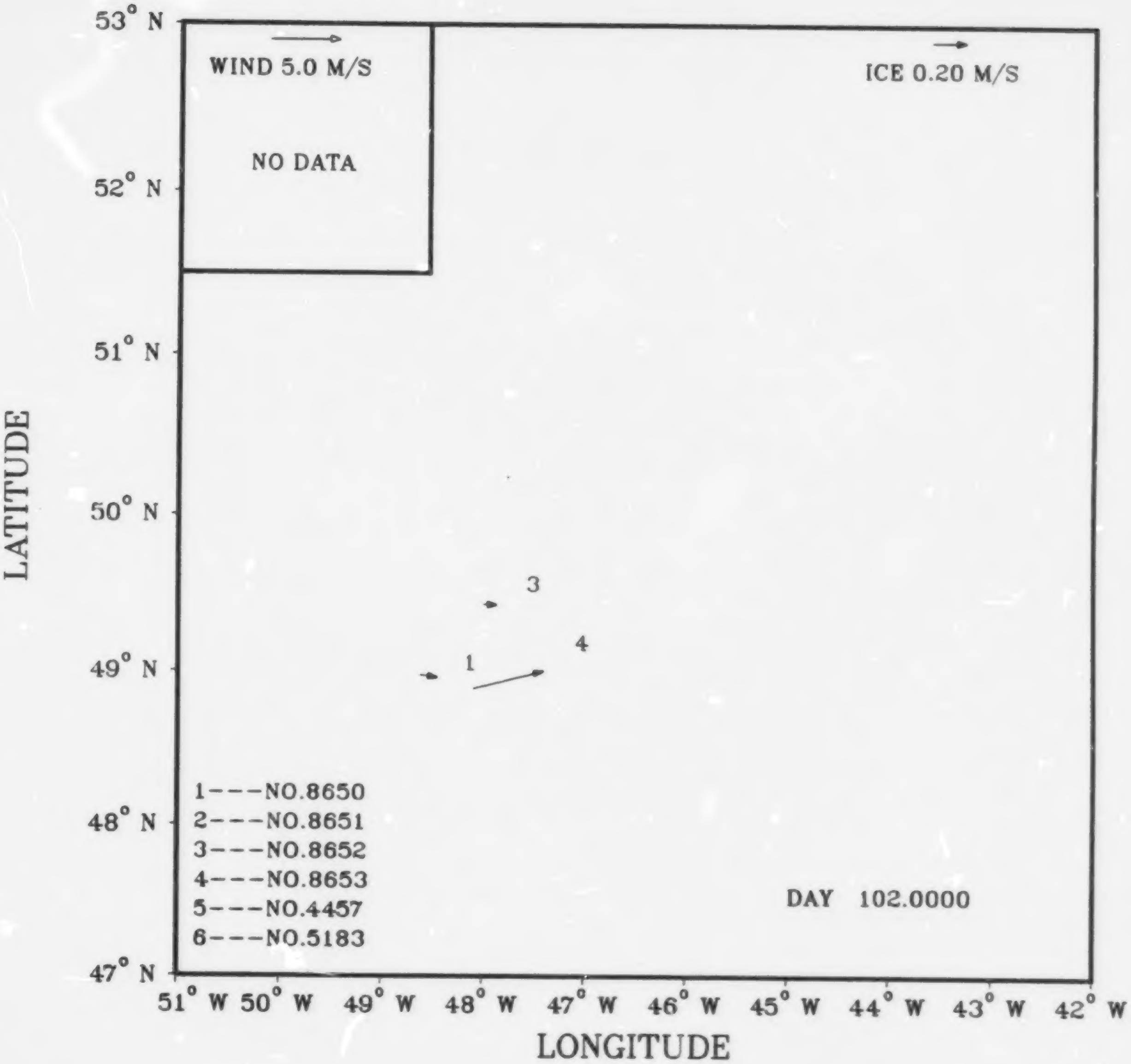
42° W
LONGITUDE


WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
3
4
1
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3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 102.0000
53° N
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51° N
50° N
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47° N
LATITUDE
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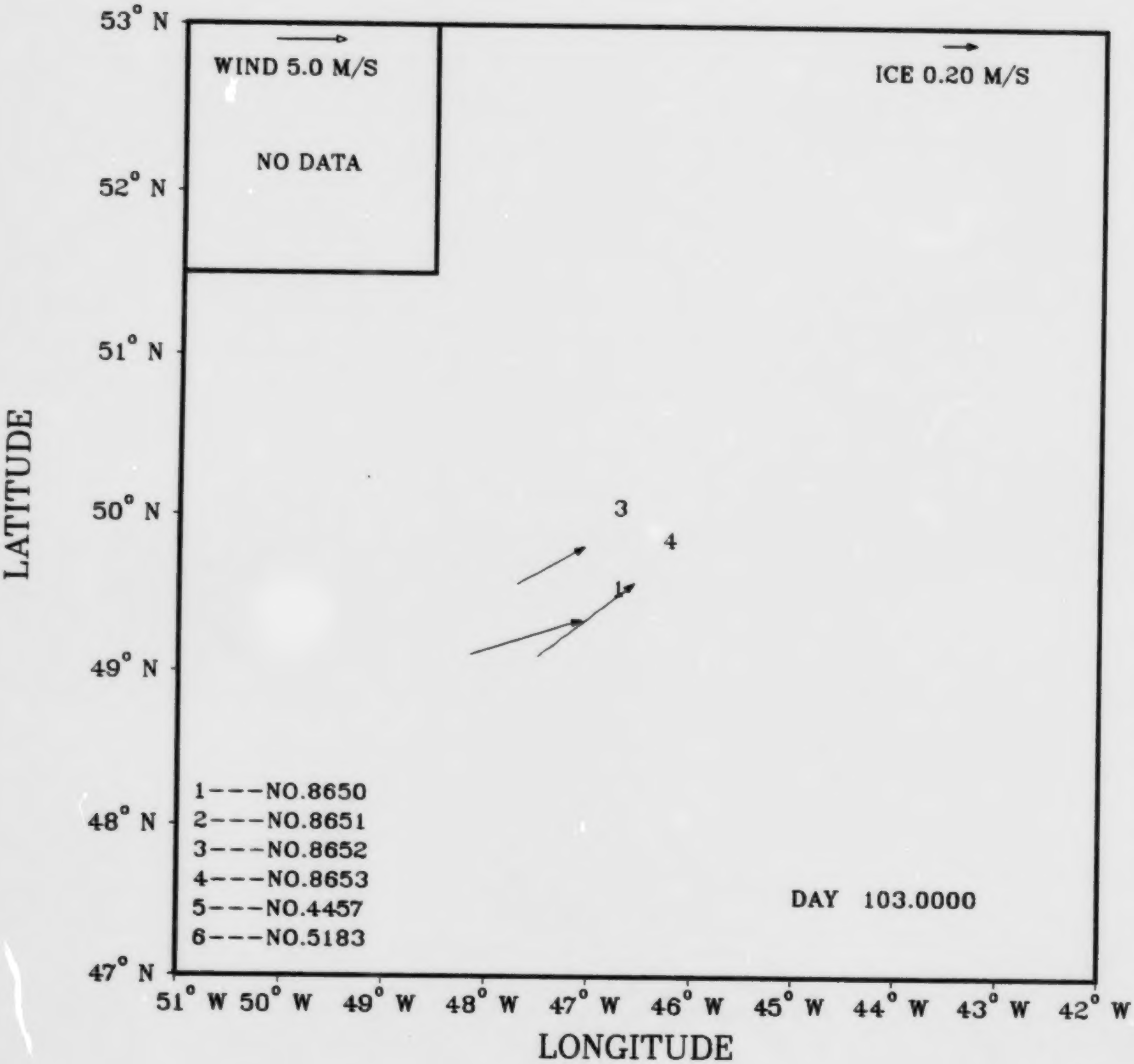
43° W
42° W
LONGITUDE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NO DATA
ICE 0.20 M/S
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48° N
47° N
LATITUDE
3
4
1
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 103.0000
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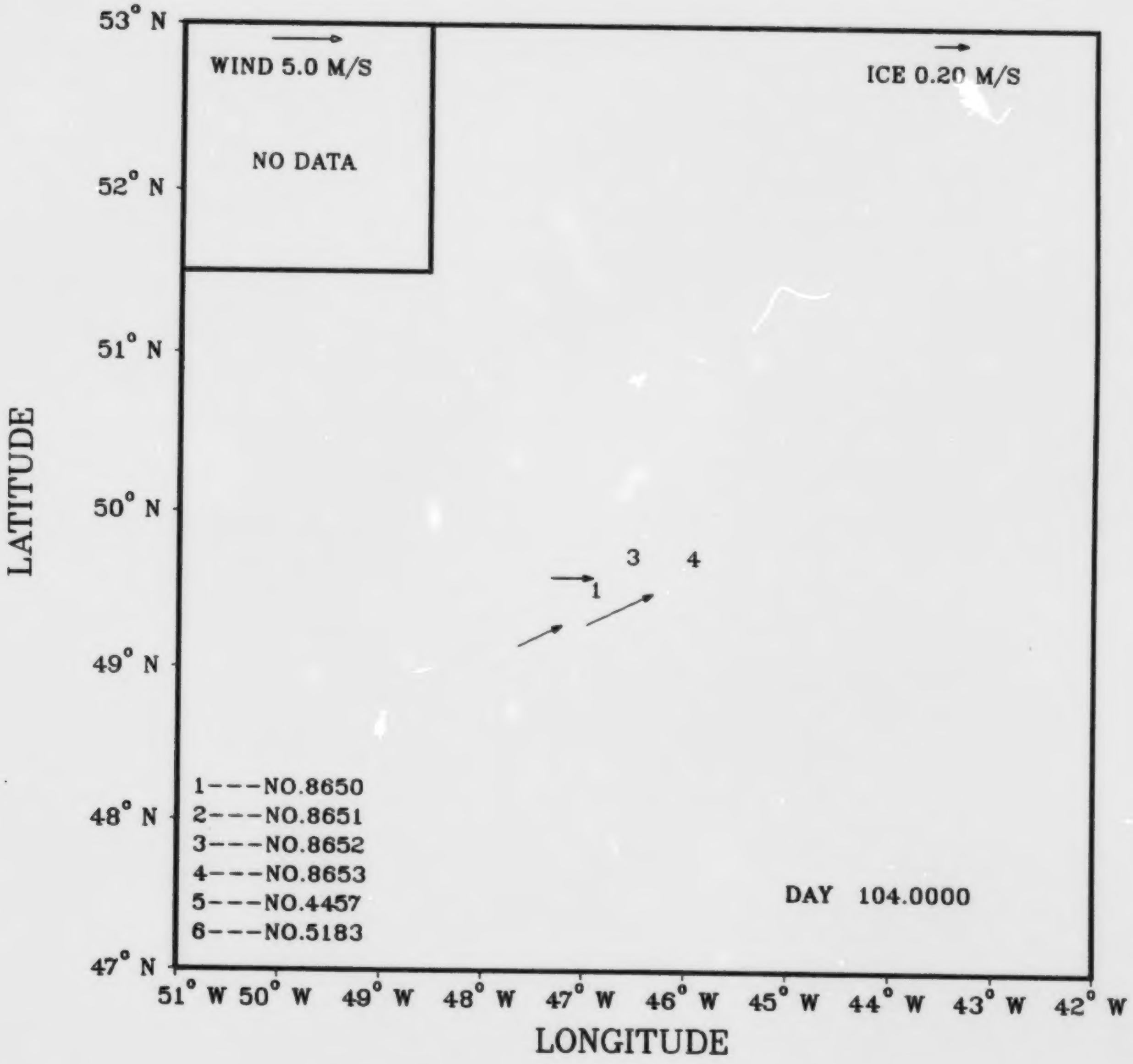
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE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NO DATA
ICE 0.20 M/S
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3
4
1---NO.8650
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3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 104.0000
53° N
52° N
51° N
50° N
49° N
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47° N
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44° W
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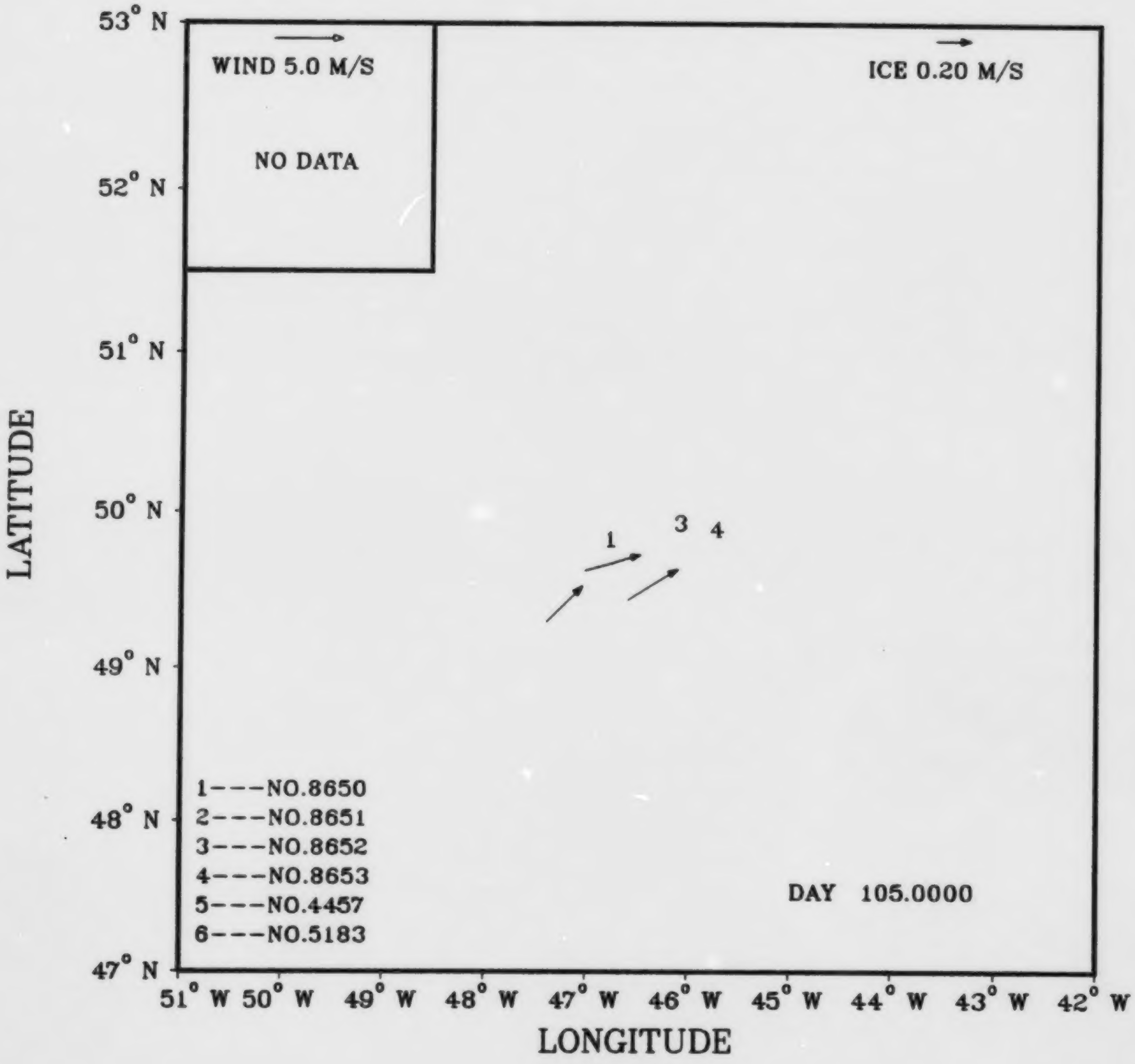
42° W
LONGITUDE



WIND 5.0 M/S
ICE 0.20 M/S
NO DATA
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52° N
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50° N
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48° N
47° N
LATITUDE
1
3
4
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 105.0000
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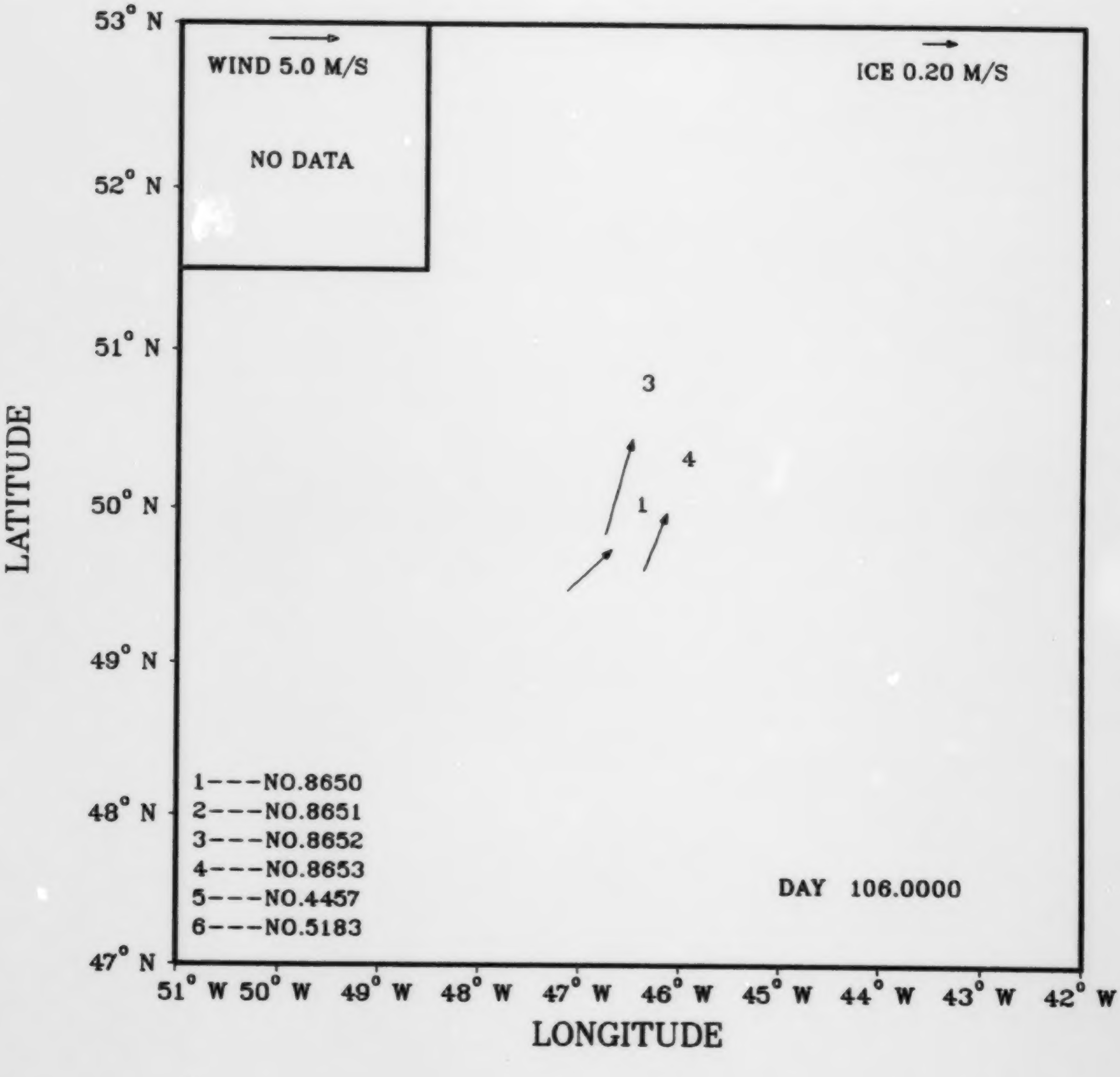
LONGITUDE


WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
3
4
1
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3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 106.0000
53° N
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51° N
50° N
49° N
48° N
47° N
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48° W
47° W
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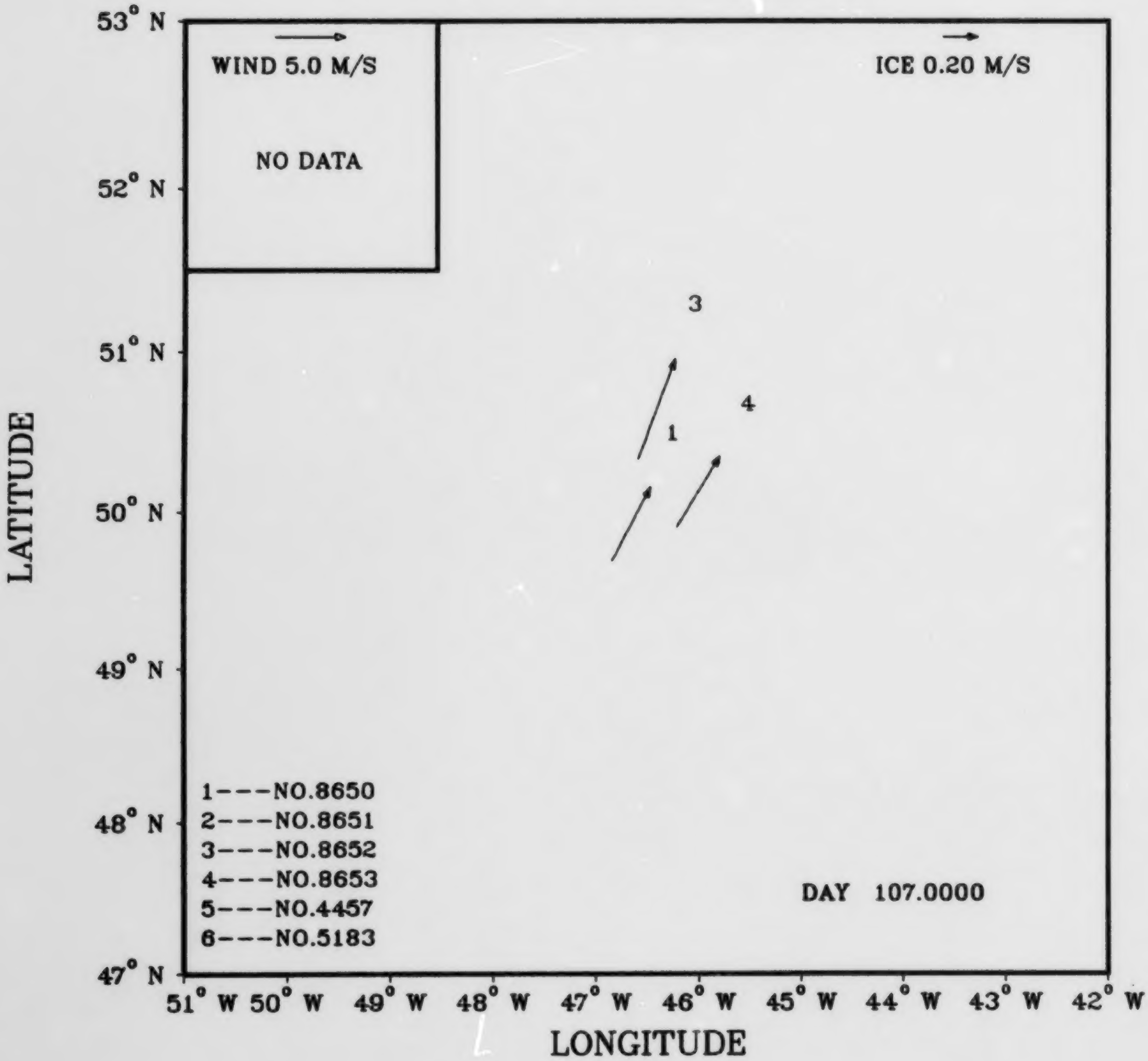
44° W
43° W
42° W
LATITUDE
LONGITUDE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49° W
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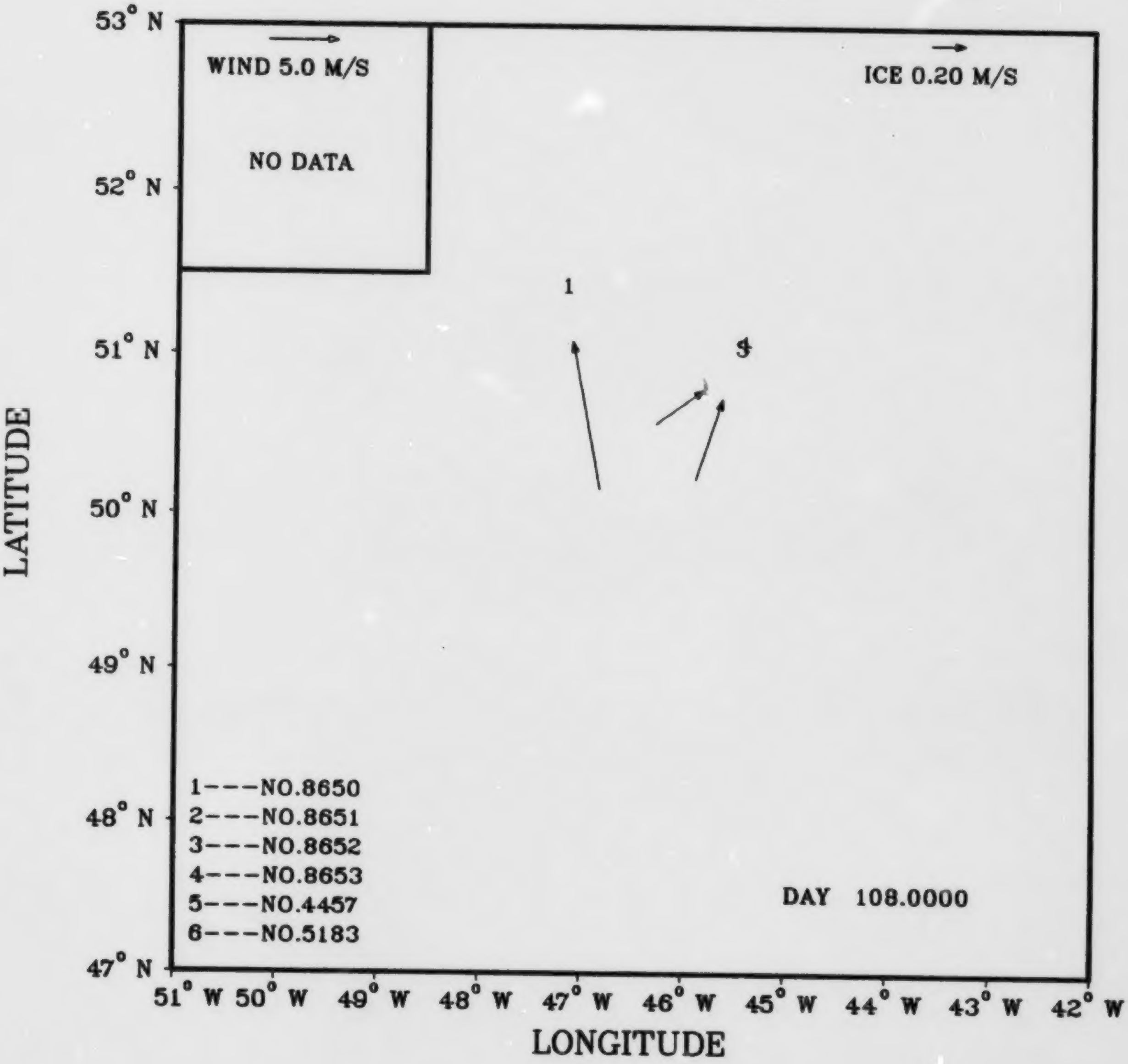
47° W
46° W
45° W
44° W
43° W
42° W
LATITUDE
LONGITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
3
1
4
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 107.0000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ICE 0.20 M/S
1
5
3
DAY 108.0000
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4---NO.8653
5---NO.4457
6---NO.5183
53° N
52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
51° W
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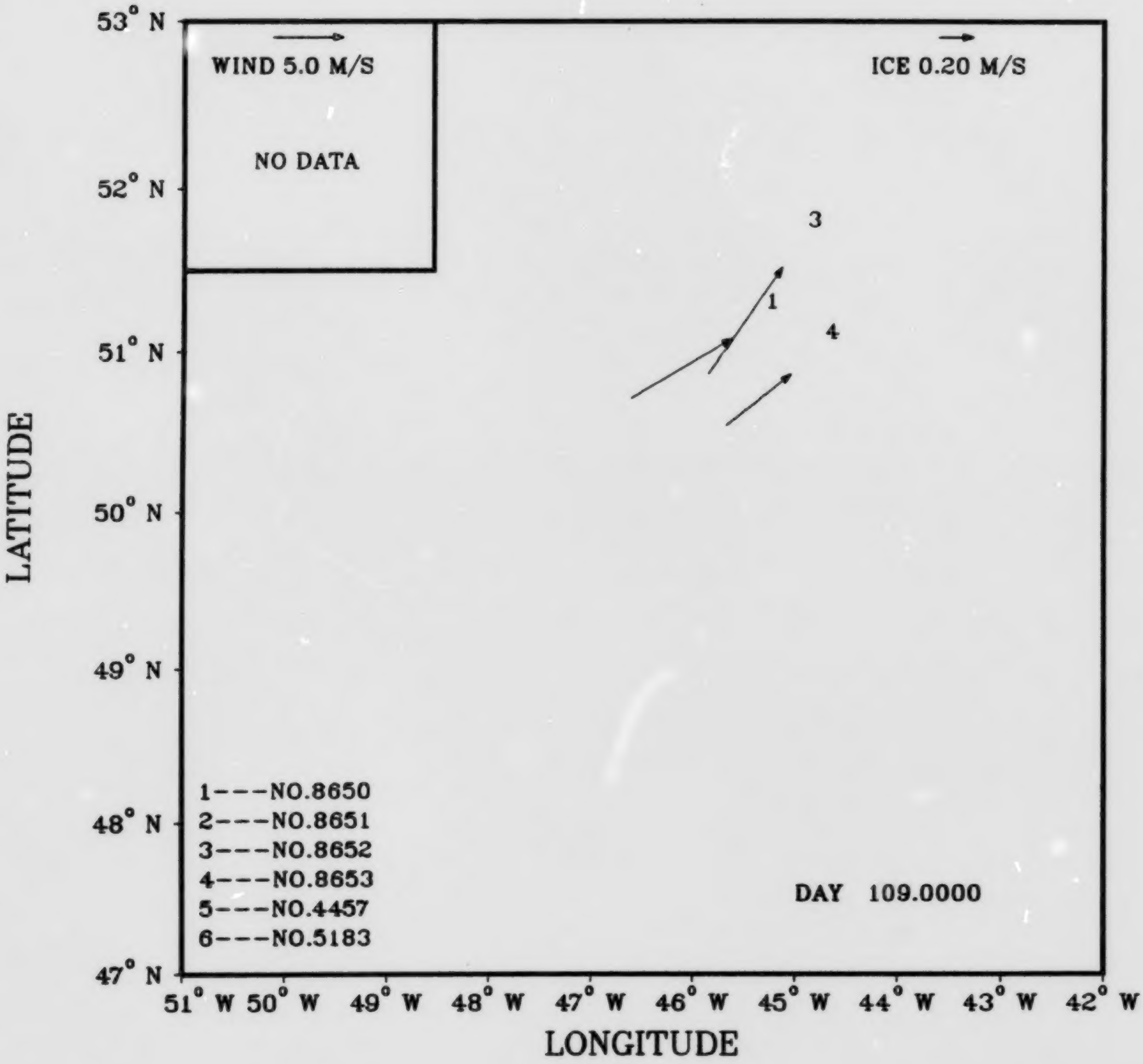
42° W
LONGITUDE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ICE 0.20 M/S
NO DATA
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1
4
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3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 109.0000
53° N
52° N
51° N
50° N
49° N
48° N
47° N
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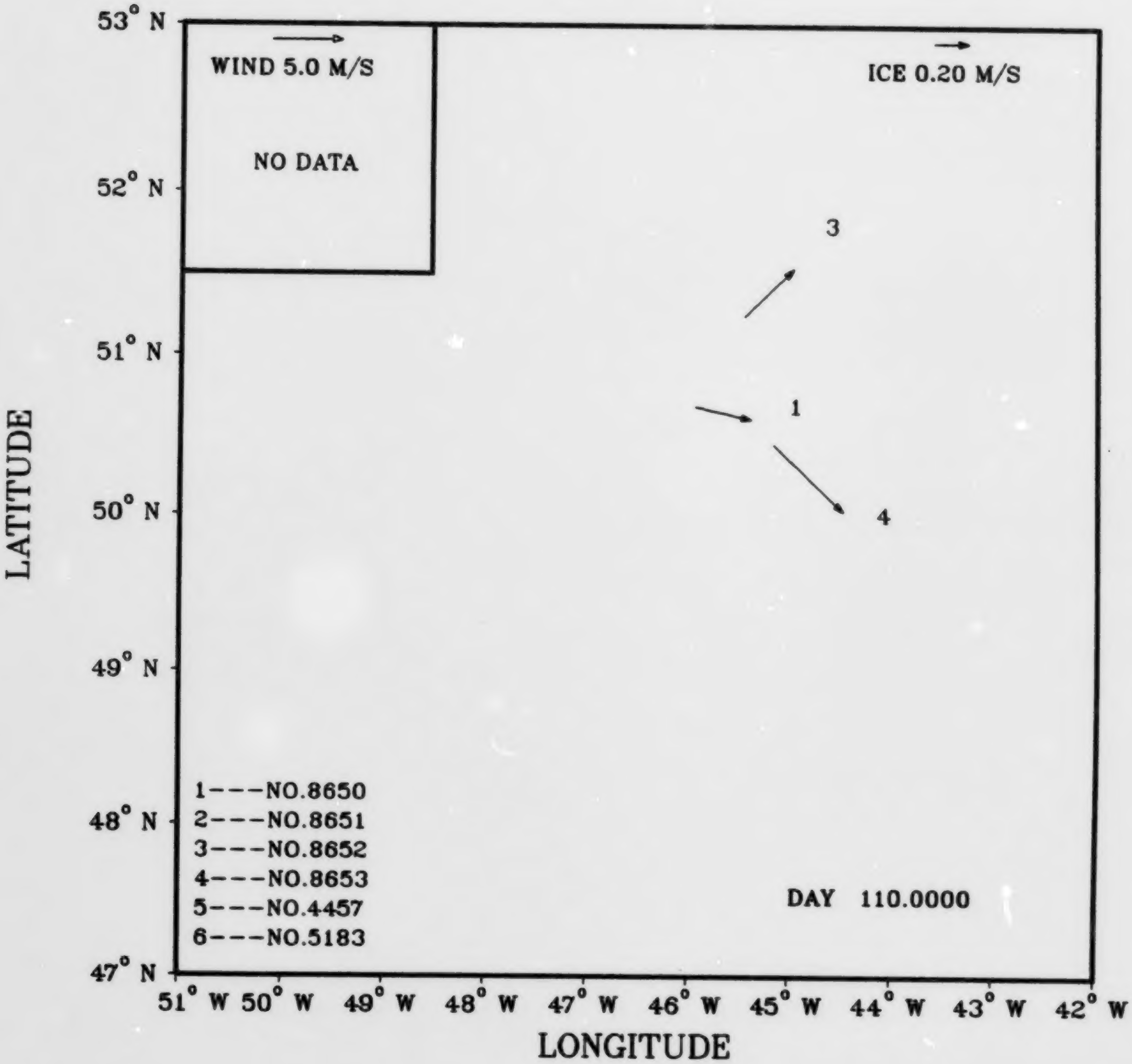
43° W
42° W
LATITUDE
LONGITUDE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LATITUDE
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50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
3
1
4
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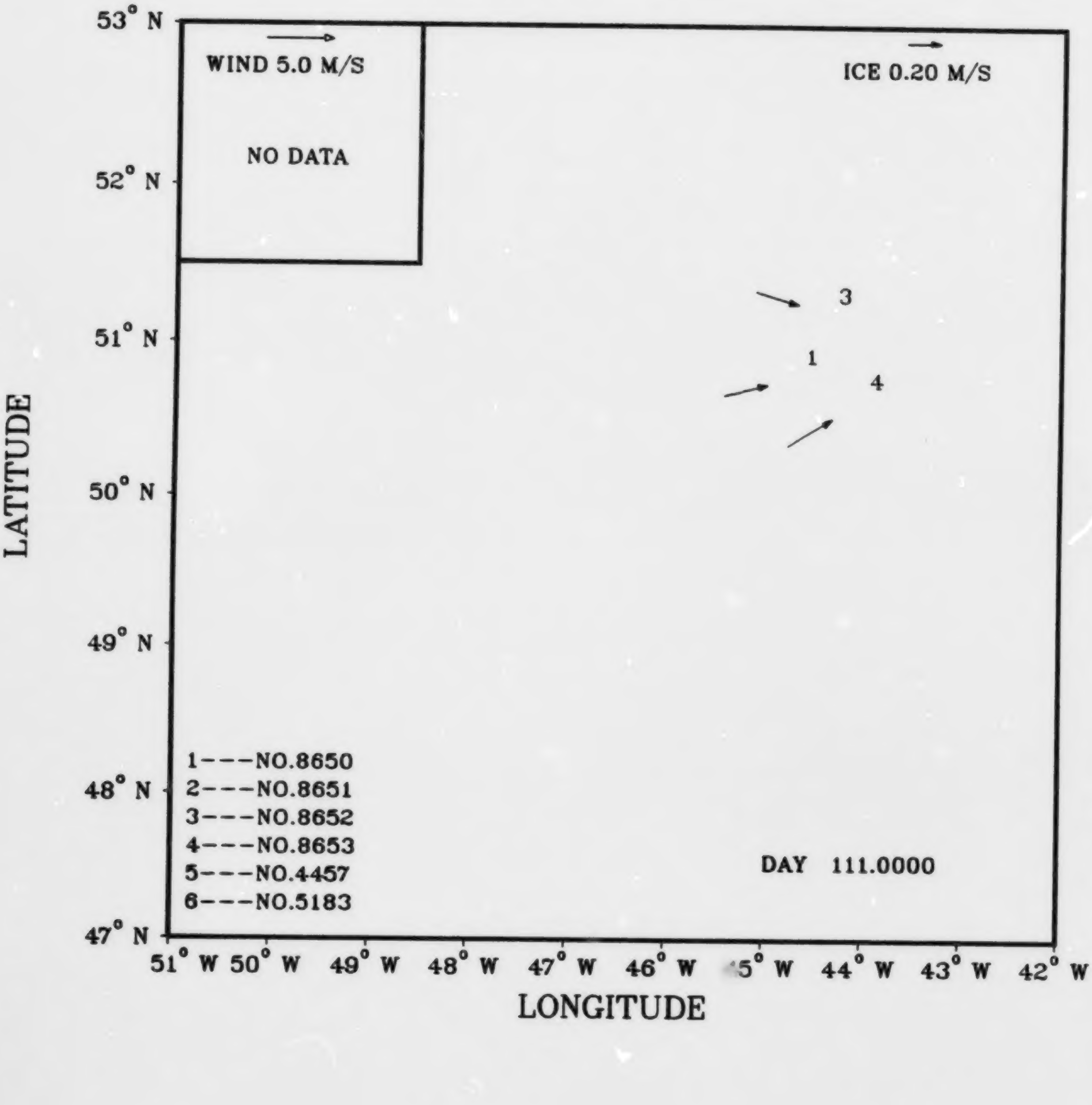
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 110.0000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50° N
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47° N
LATITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
3
1
4
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 111.0000
51° W
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49° W
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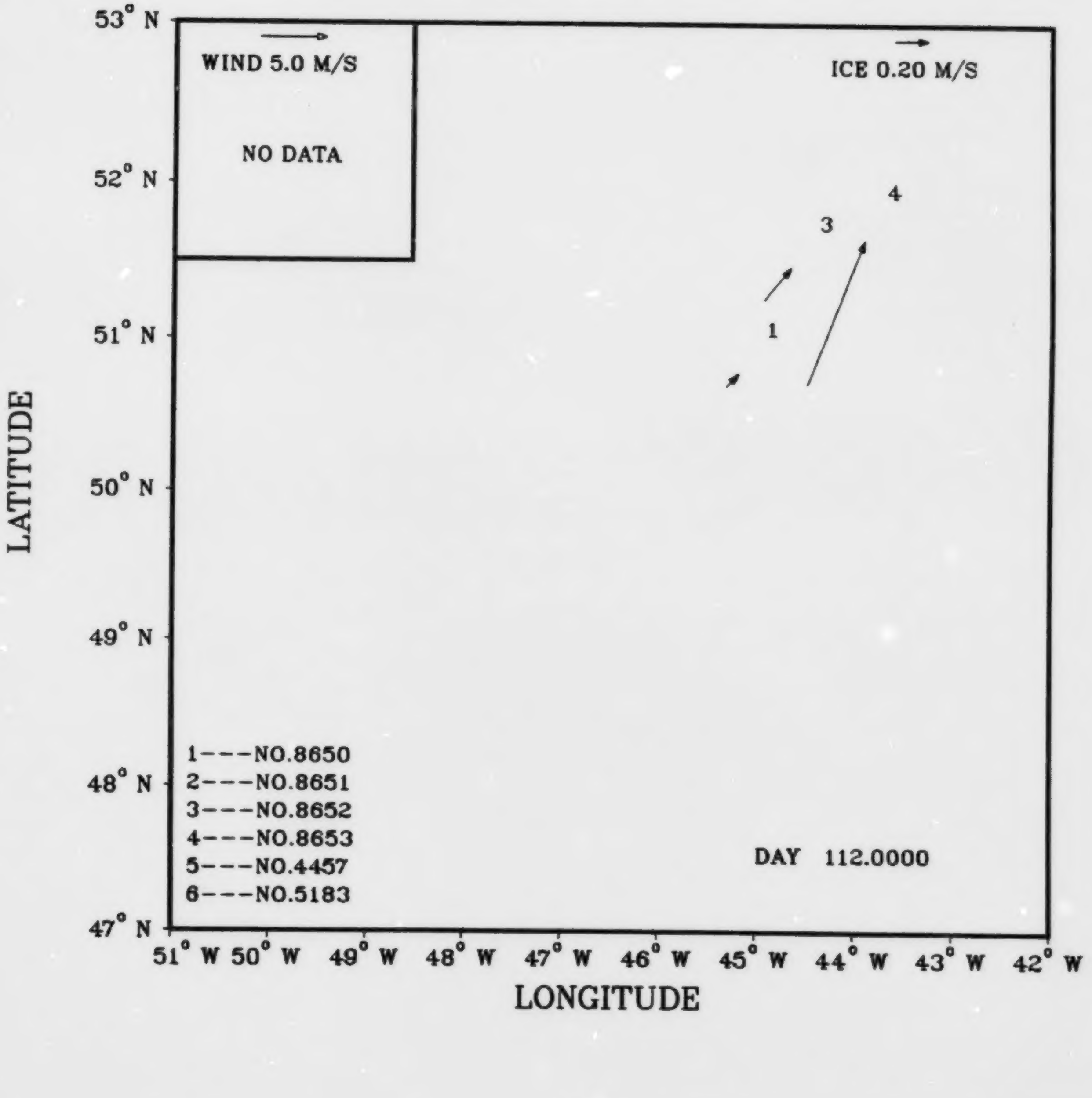
44° W
43° W
42° W
LONGITUDE



53° N
52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
1
3
4
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 112.0000
51° W
50° W
49° W
48° W
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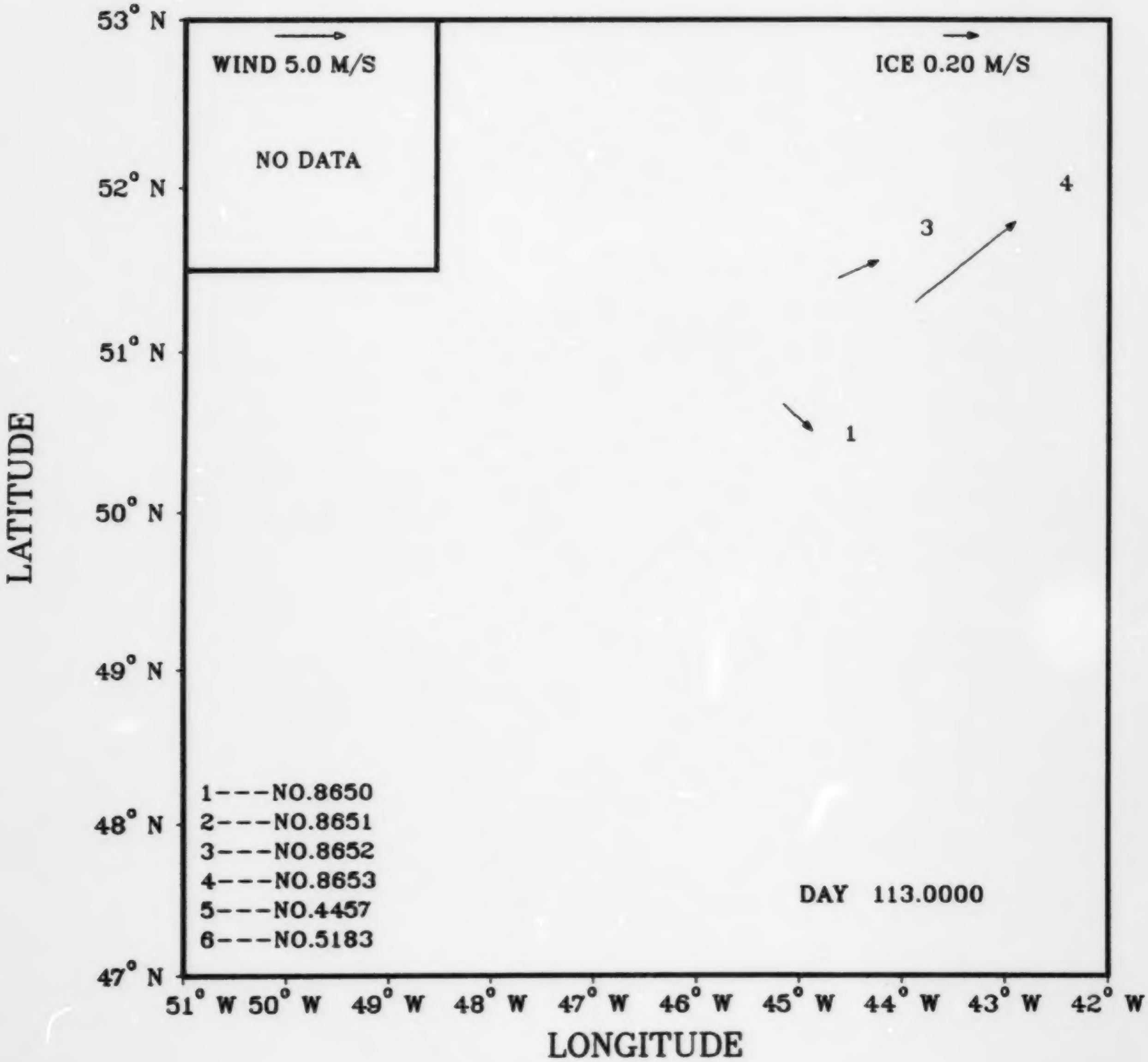
45° W
44° W
43° W
42° W
LONGITUDE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ICE 0.20 M/S
4
3
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4---NO.8653
5---NO.4457
6---NO.5183
DAY 113.0000
53° N
52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
51° W
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47° W
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44° W
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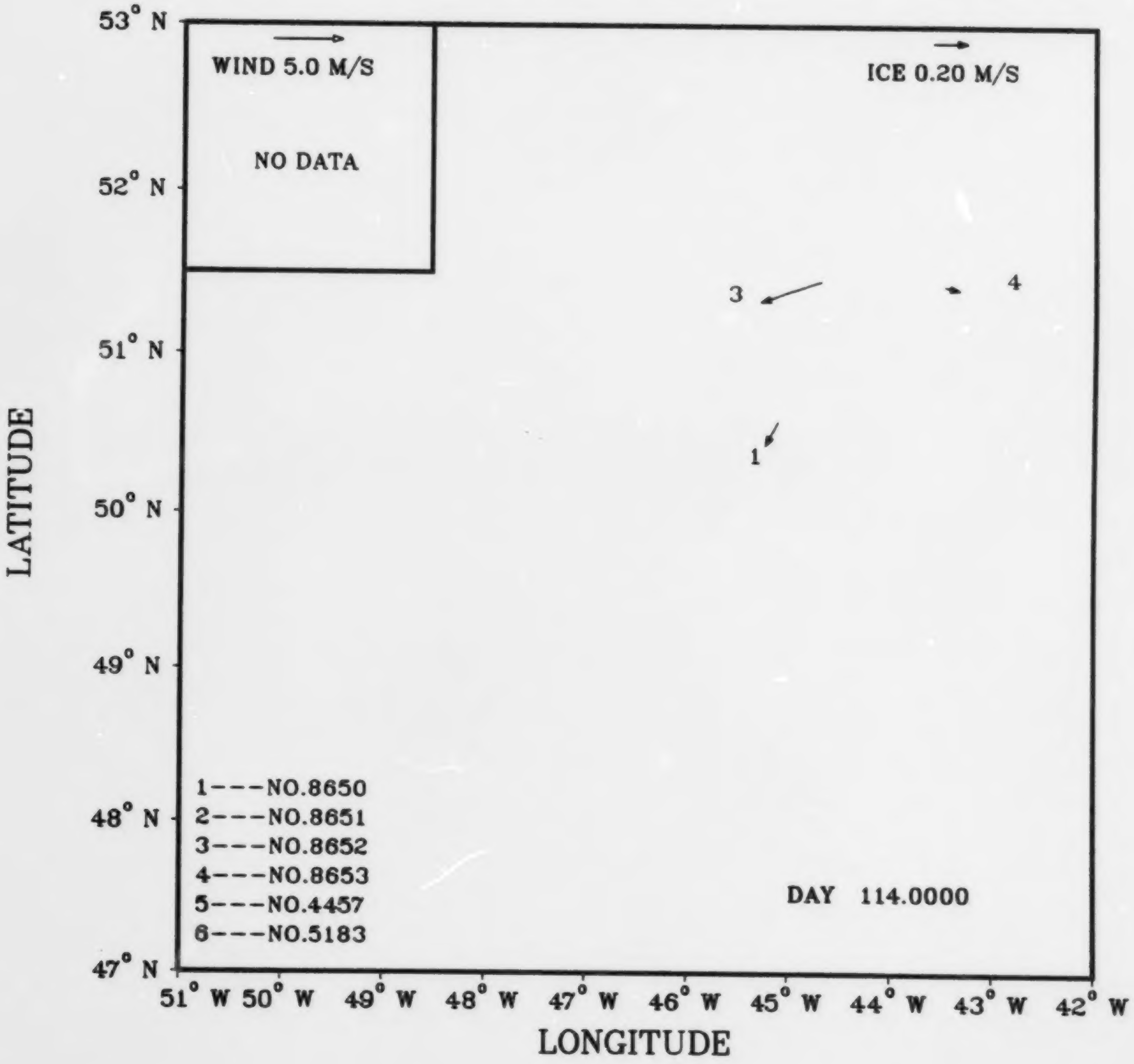
42° W
LONGITUDE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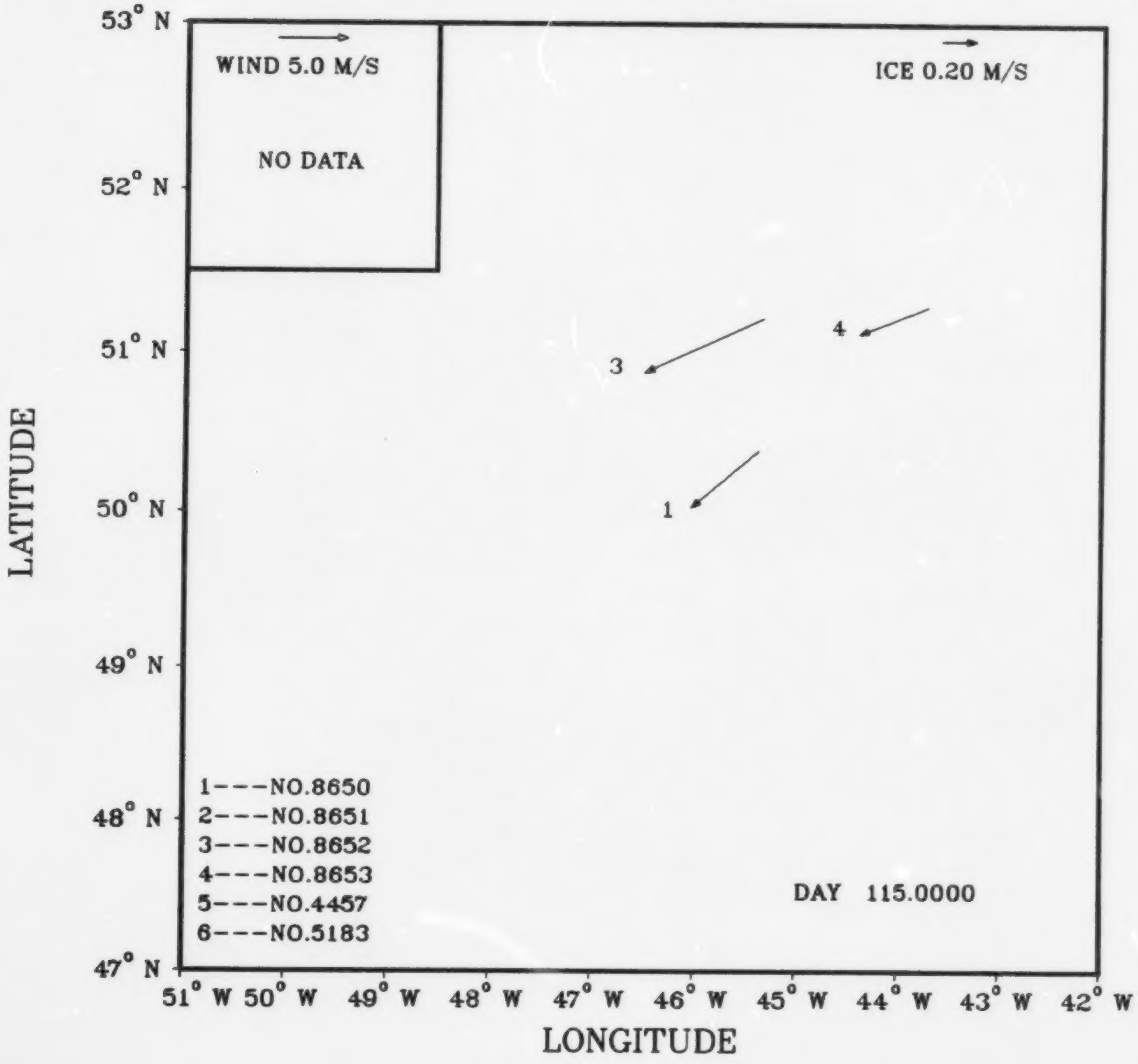
47° N
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
3
4
1
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 114.0000
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
LATITUDE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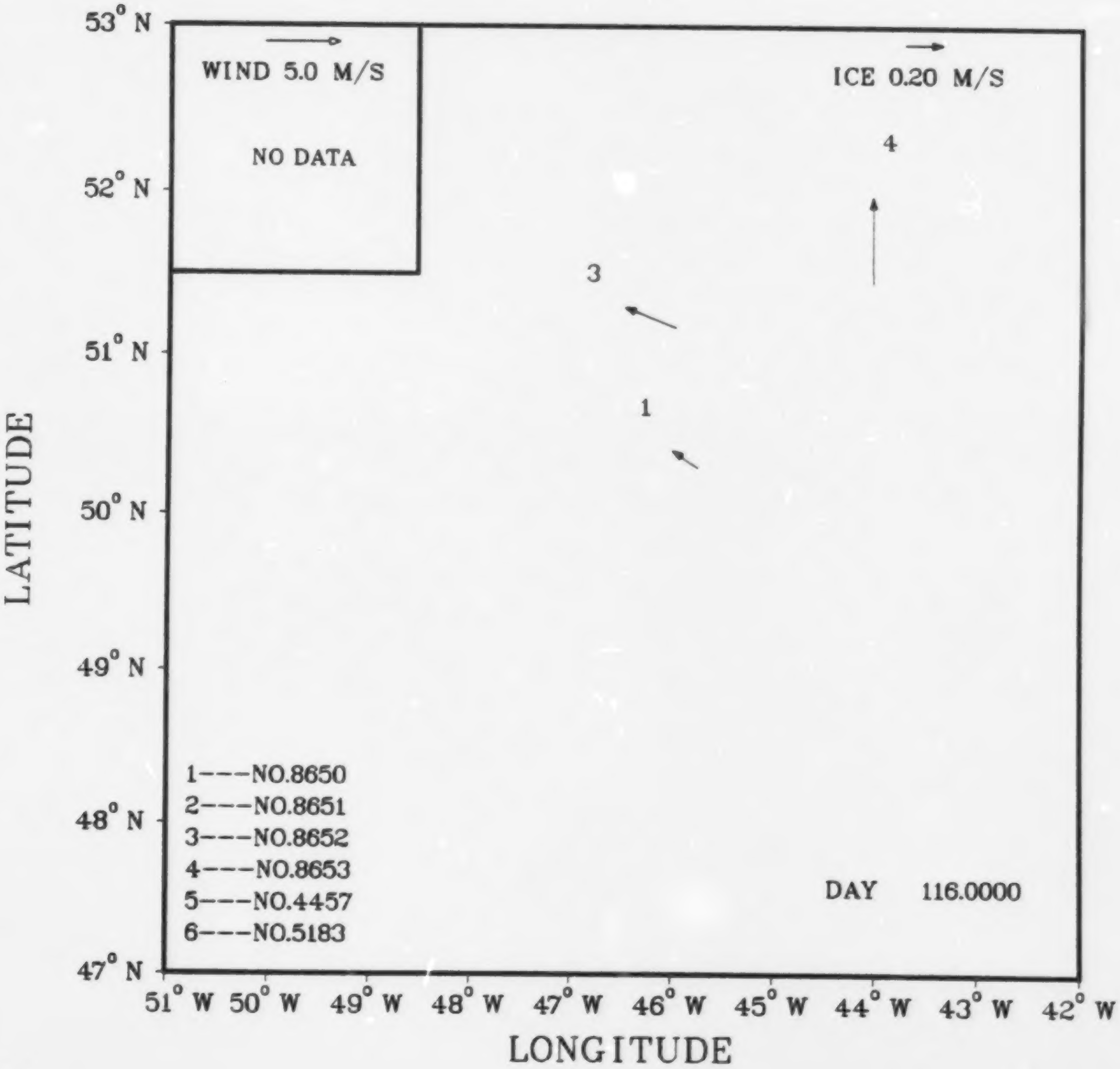
NO DATA
ICE 0.20 M/S
53° N
52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
3
4
1
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 115.0000
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE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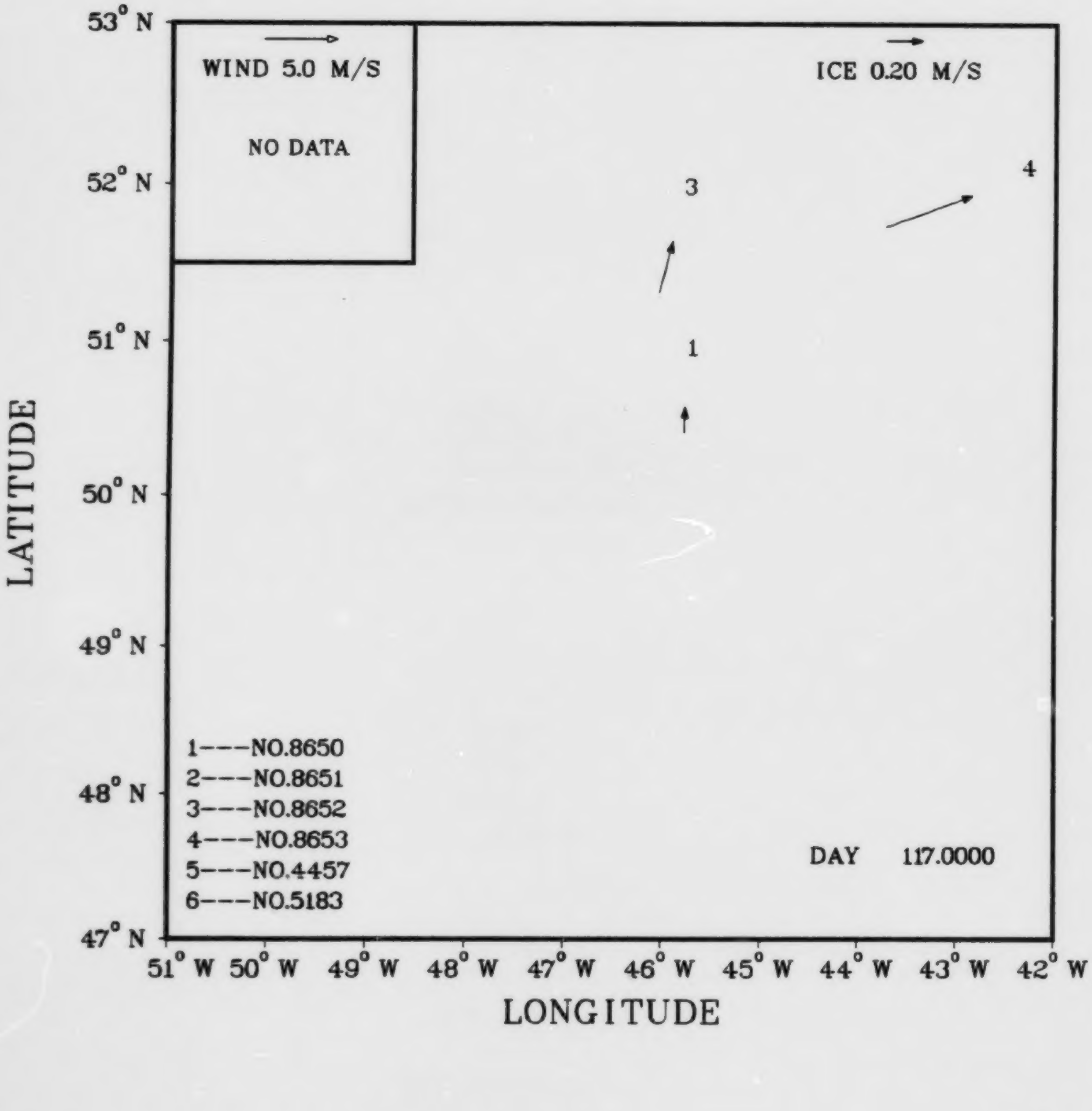
52° N
51° N
50° N
49° N
48° N
47° N
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
4
3
1
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 116.0000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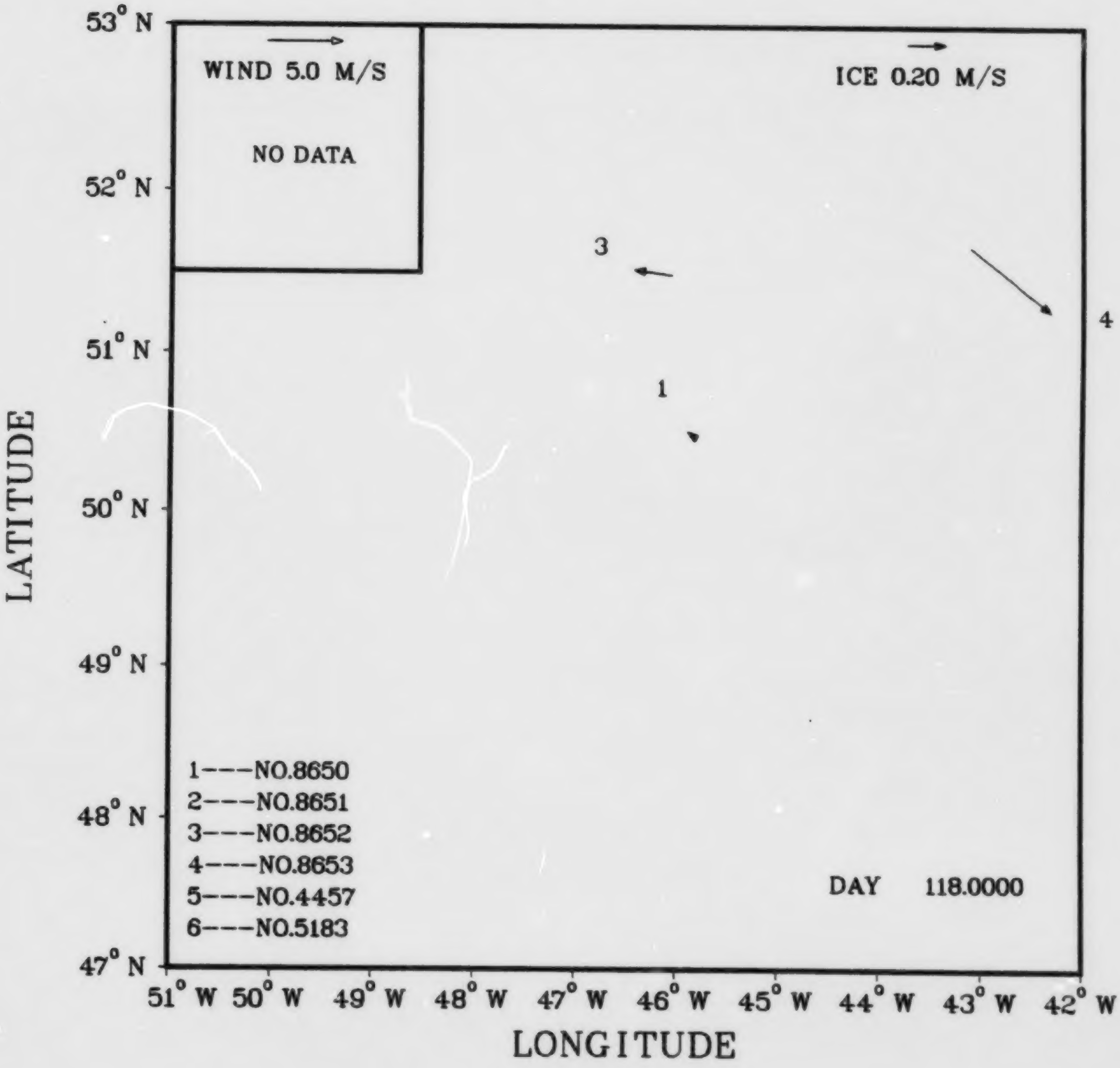
47° N
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
3
4
1
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 117.0000


53° N
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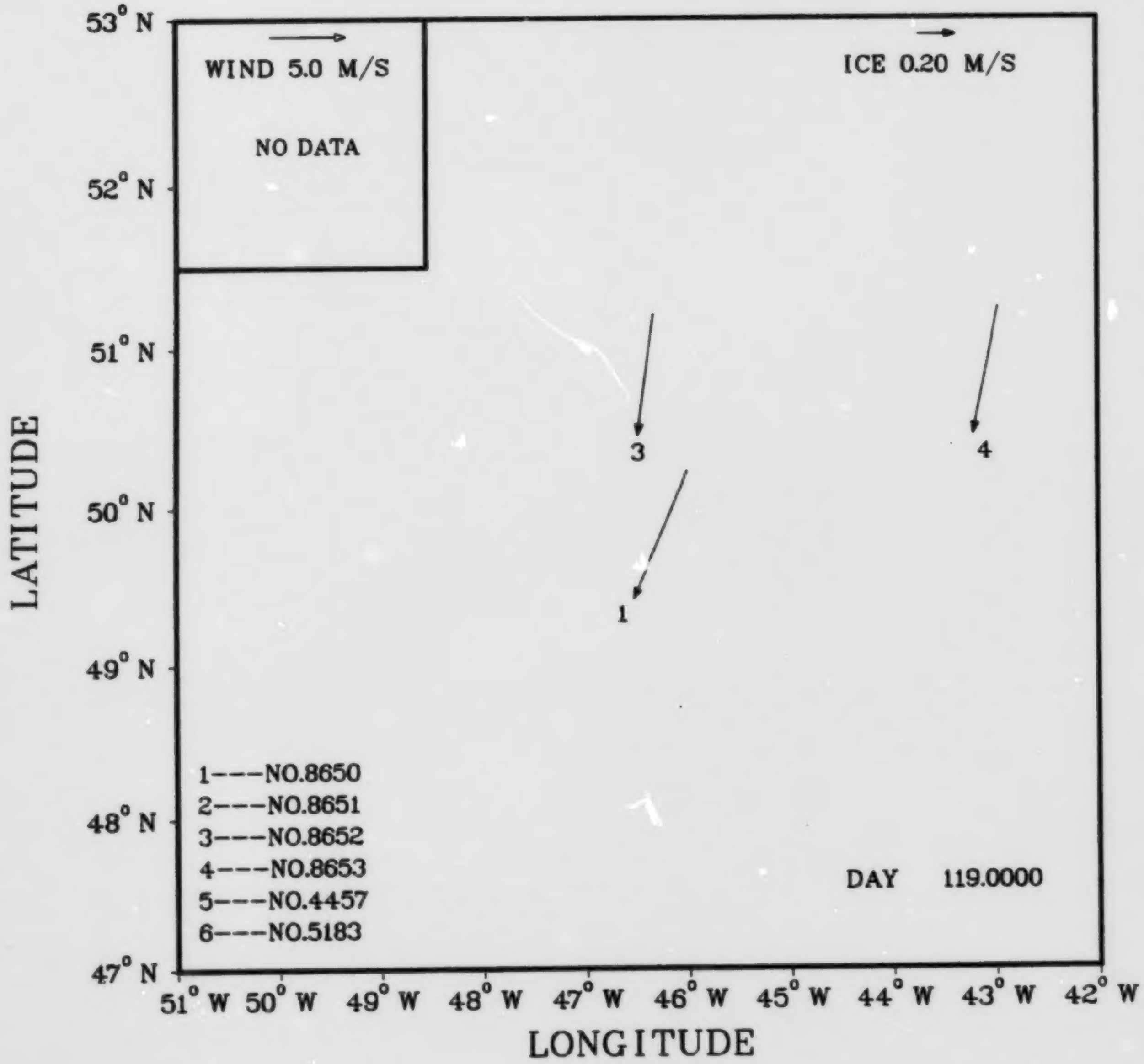
51° N
50° N
49° N
48° N
47° N
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LATITUDE
LONGITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
3
1
4
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 118.0000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49° N
48° N
47° N
LATITUDE
51° W
50° W
49° W
48° W
47° W
46° W
45° W
44° W
43° W
42° W
LONGITUDE
WIND 5.0 M/S
NO DATA
ICE 0.20 M/S
3
4
1
1---NO.8650
2---NO.8651
3---NO.8652
4---NO.8653
5---NO.4457
6---NO.5183
DAY 119.0000

6. Current meter and thermistor chain data

6.1 Locations of current meters and thermistor chain moorings

Three current meter strings, one thermistor chain, and an acoustic Doppler current profiler were deployed approximately 120 km east of the Avalon Penninsula. A summary of the moorings and information about the data are given in p. 118. In the sensor column, the letters "T", "S", "R", "D", and "P" denote temperature, salinity, rate, direction, and pressure respectively. A location map is shown in p. 119.

6.2 Time series plots

The current meter and thermistor chain data have a sampling interval of 20 minutes. Time series plots of the data are shown in p. 120 to p. 146. The labels on the top of each panel give the parameter ("R" for speed, "D" for direction, "P" for pressure, "S" for salinity, and "T" for temperature), the mooring number, and the meter depth.

6.3 Progressive vector diagrams

Progressive vector diagrams for the current meter data are shown in p. 147 to p. 157.

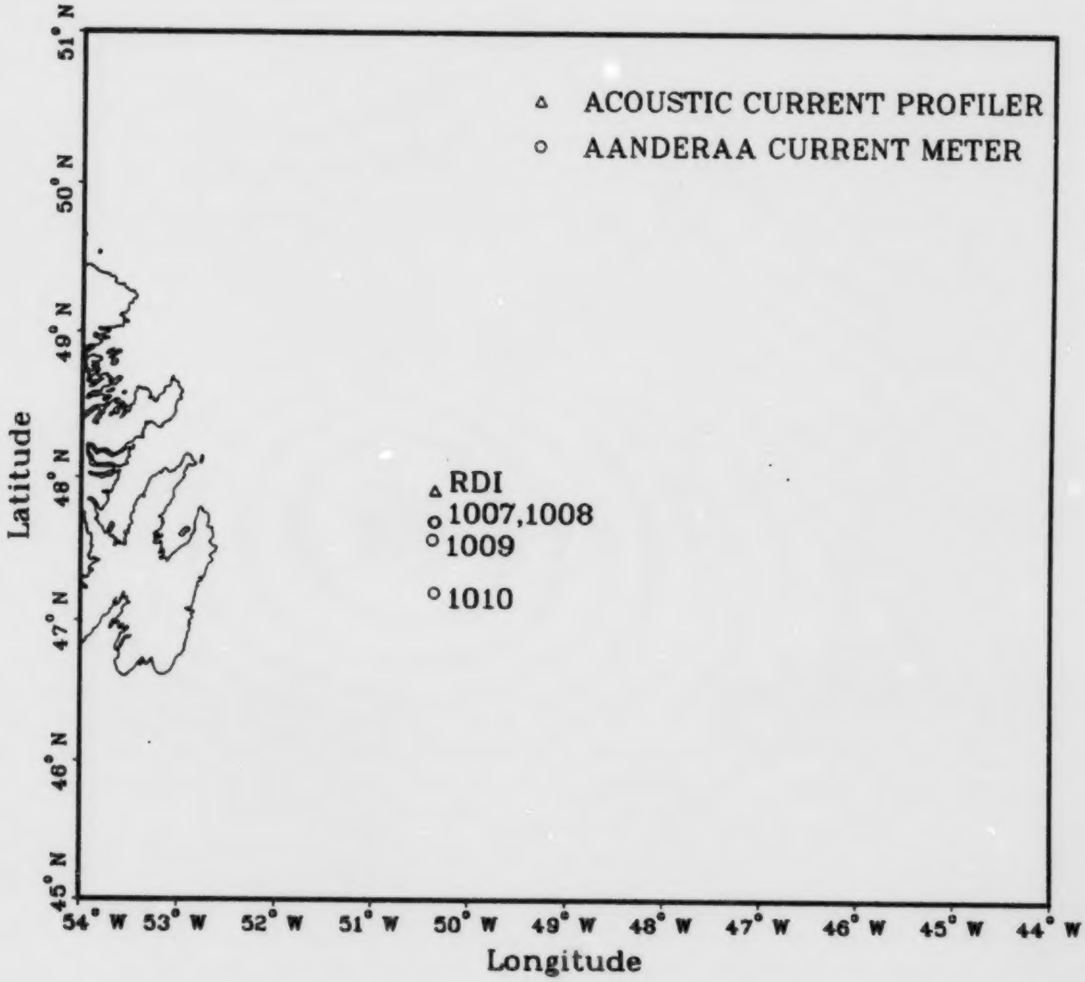
6.4 Acoustic doppler current profiler data

An acoustic Doppler current profiler manufactured by RDI Instruments was deployed on the sea bottom protected by a trawl resistant package. Currents were measured at 14 depths. Time series plots of speeds and directions are shown in p. 158 to p. 172. Progressive vector diagrams are shown in p. 173 to p. 187. The current at the last depth (122.3 m) has a westward drift due to an instrumental error. In the time series plot and progressive vector diagram of this depth, both the original data (p. 171 and p. 186) and the zero-mean data (p. 172 and p. 187) are shown. All the current profiler data shown are 3-point averaged data with a time interval of one hour.

Summary of current meter moorings

	meter depth (m)	water depth (m)	sensor	position	start time	end time	duration (day)
Aanderaa (peddle wheel) # 1007	15	124	T,S,R,D,P	47°42.12'N 50°21.17'W	26/3/90 (day 85) 17:39:55	2/6/90 8:39:55	67.63
	20		T,S,R,D			3/6/90 11:39:55	68.75
	30		T,S,R,D,P			3/6/90 12:09:55	68.77
	40		T,S,R,D			3/6/90 11:29:55	68.74
	59		T,S,R,D,P			3/6/90 11:09:55	68.73
	80		T,S,R,D,P			3/6/90 2:29:55	68.37
Aanderaa (peddle wheel) # 1009	15	118	T,S,R,D,P	47°34.57'N 50°22.98'W	26/3/90 (day 85) 20:19:55	2/6/90 22:59:55	68.11
	30		T,S,R,D,P			3/6/90 9:19:55	68.53
	60		T,S,R,D			29/5/90 12:29:55	63.67
Aanderaa (peddle wheel) # 1010	15	118	T,S,R,D,P	47°12.30'N 50°21.48'W	26/3/90 (day 85) 22:49:55	1/5/90 15:39:55	35.70
	30		T,S,R,D,P			1/5/90 15:49:55	35.71
	60		T,S,R,D,P			1/5/90 6:39:55	35.33
Thermis-tor chain # 1008	.32	119	T	47°42.10'N 50°21.82'W	26/3/90 (day 85) 18:49:55	3/6/90 (day 154) 11:29:55	68.69
	5						
	10						
	15						
	20						
	25						
	30						
	35						
	40						
	47.5						
	55						
Acoustic Current Profiler RDI	11.9	135	U,V	47°55.25'N 50°21.22'W	26/3/90 (day 85) 16:00	3/6/90 (day 154) 13:00	68.88
	20.4						
	28.9						
	37.4						
	45.9						
	54.4						
	62.8						
	71.3						
	79.8						
	88.3						
	96.8						
	105.3						
	113.8						
	122.3						

LOCATION OF CURRENT METERS (89−041)


△ ACOUSTIC CURRENT PROFILER
○ AANDERAA CURRENT METER
RDI
1007,1008
1009
1010
Latitude
51° N
50° N
49° N
48° N
47° N
46° N
45° N
Longitude
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52° W
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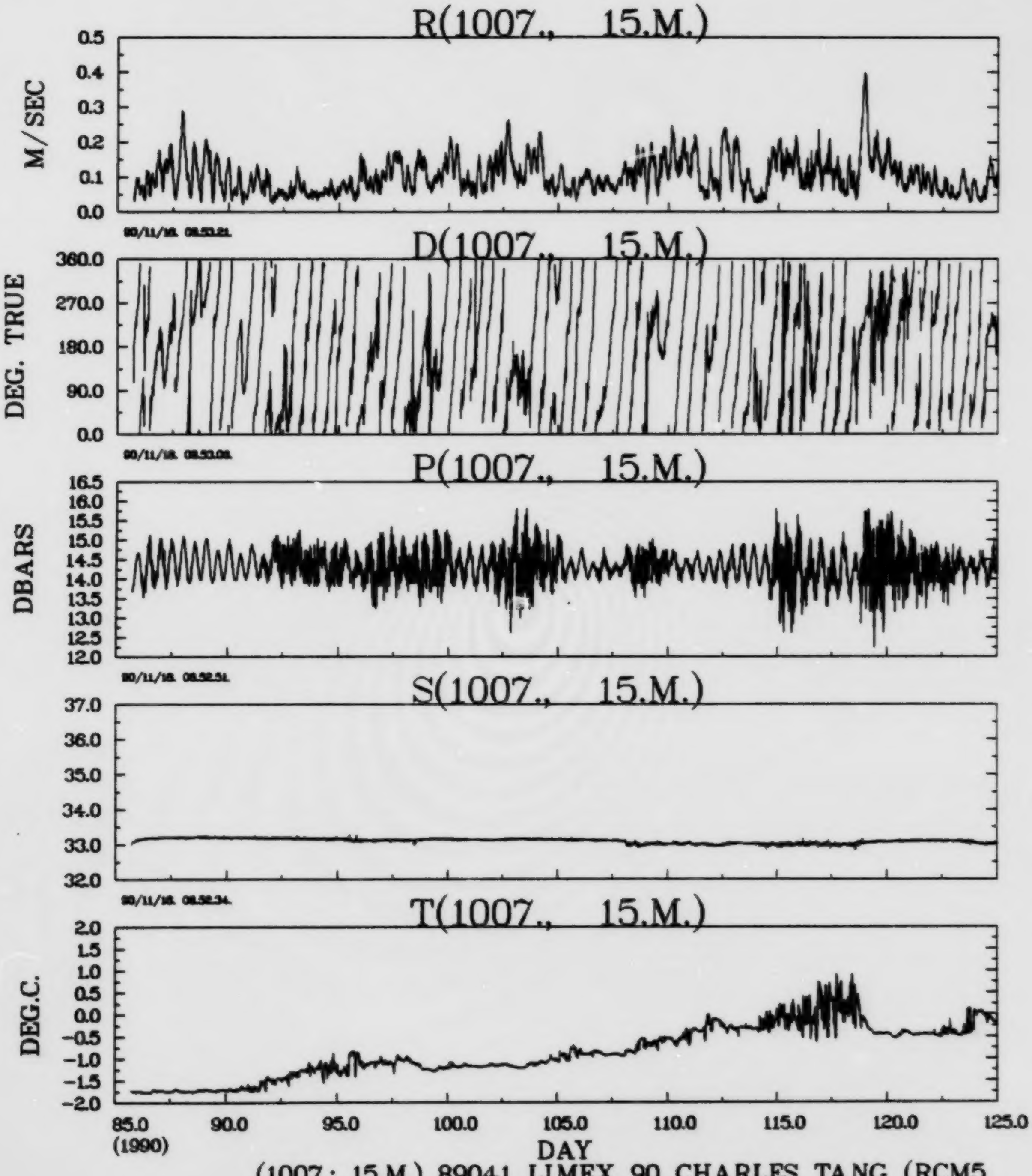
46° W
45° W
44° W



(1007.; 15.M.) 89041 LIMEX 90 CHARLES TANG (RCM5 6400 PADDLE WHEEL)

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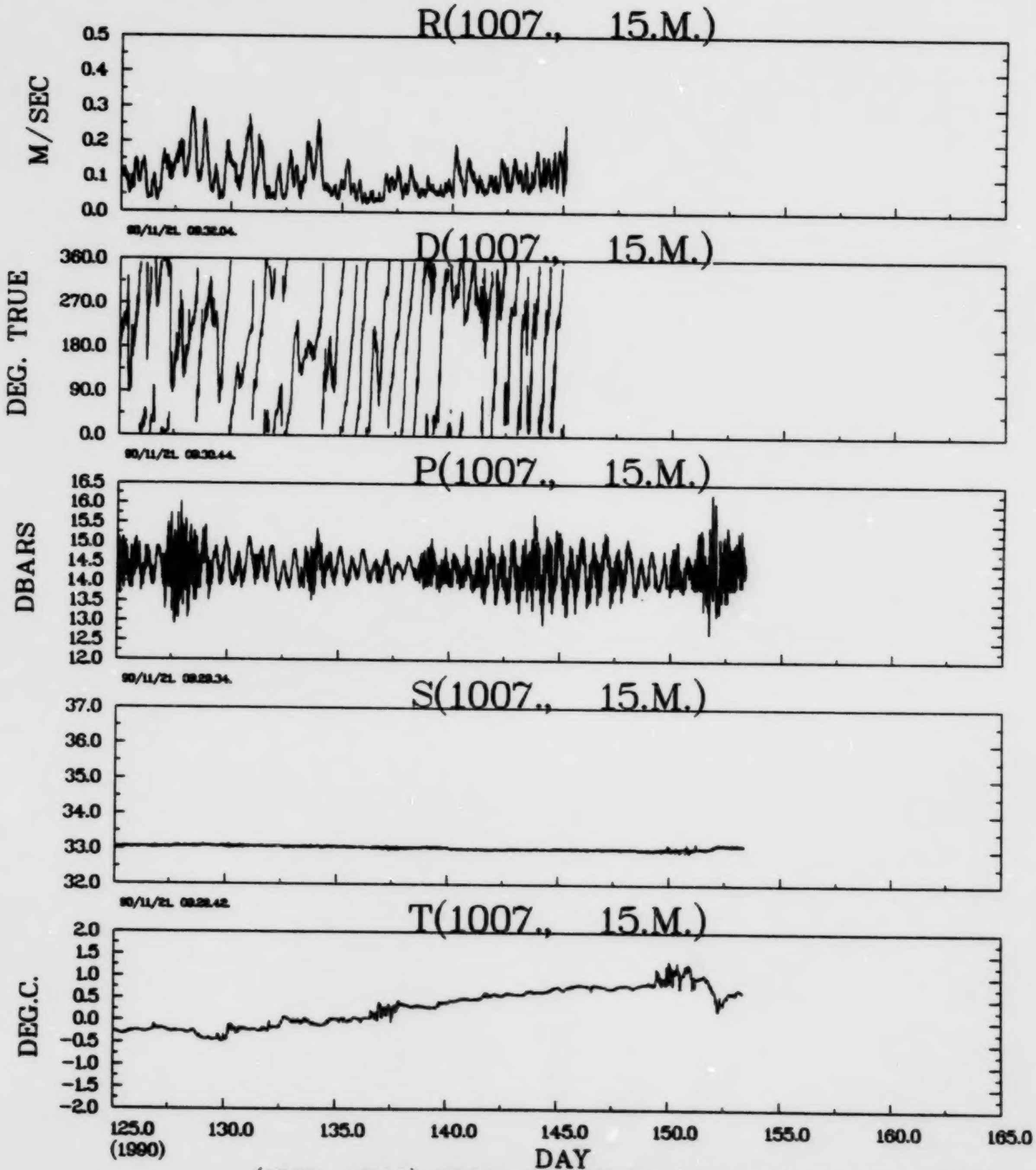
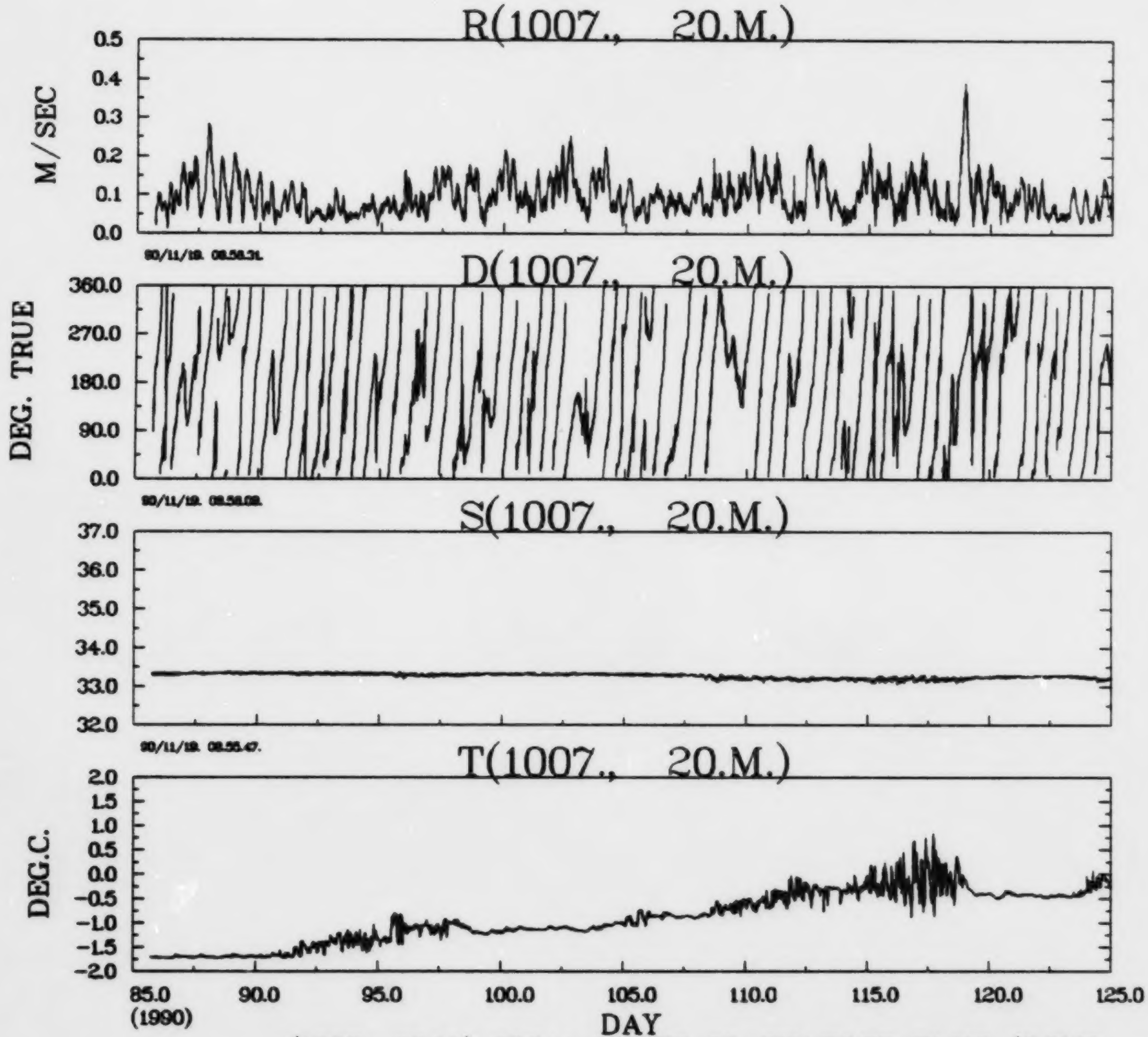


(1007.; 15.M.) 89041 LIMEX 90 CHARLES TANG (RCM5 6400 PADDLE WHEEL)

INST. 6400
90/11/21. 09.37.32.



(1007.; 20.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 3300)

INST. 3300
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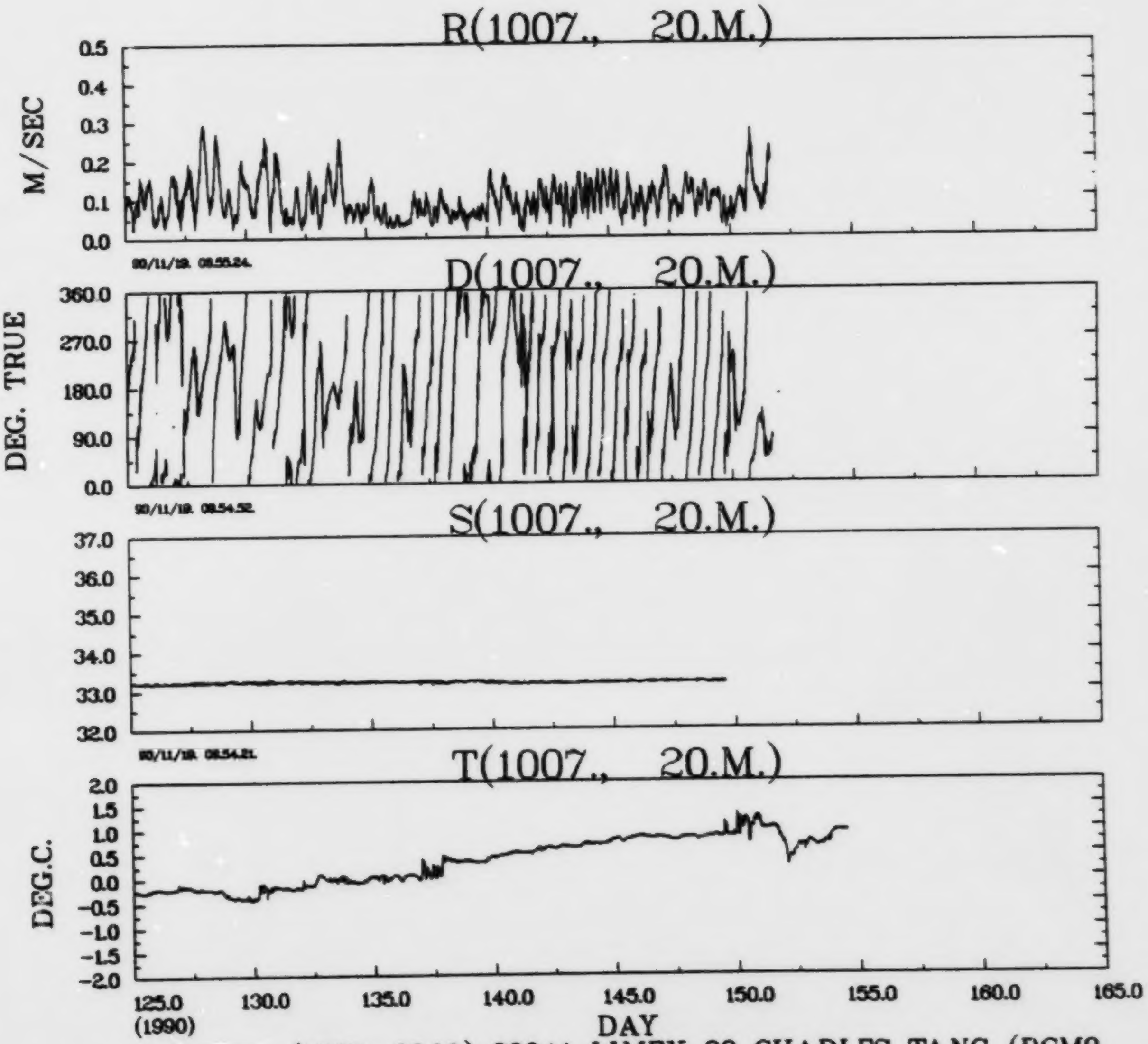
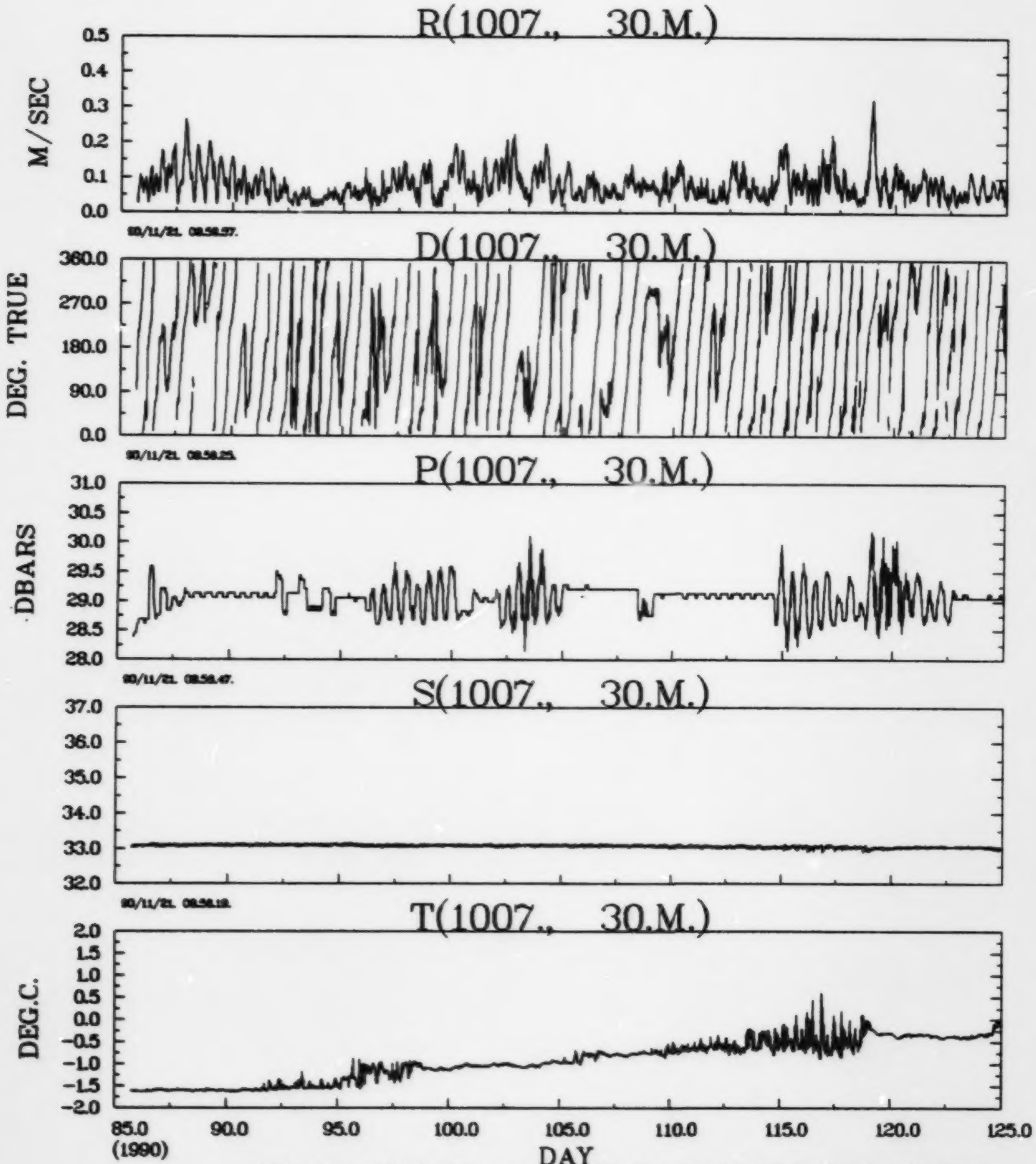


(1007.; 20.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 3300)

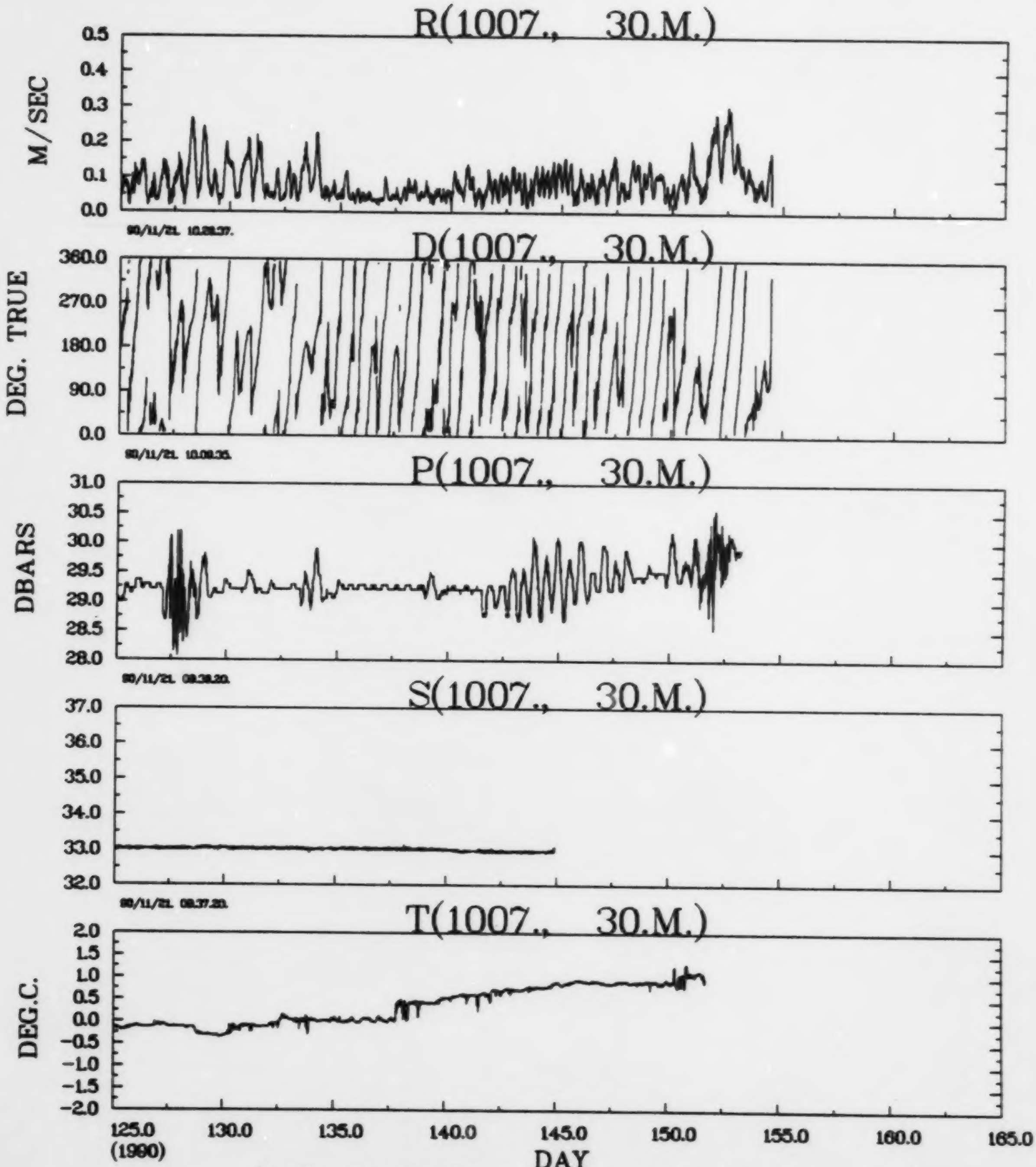
INST. 3300
90/11/19. 08.53.50.



(1007.; 30.M.) 89041 LIMEX 90 CHARLES TANG (RCM7 9071)

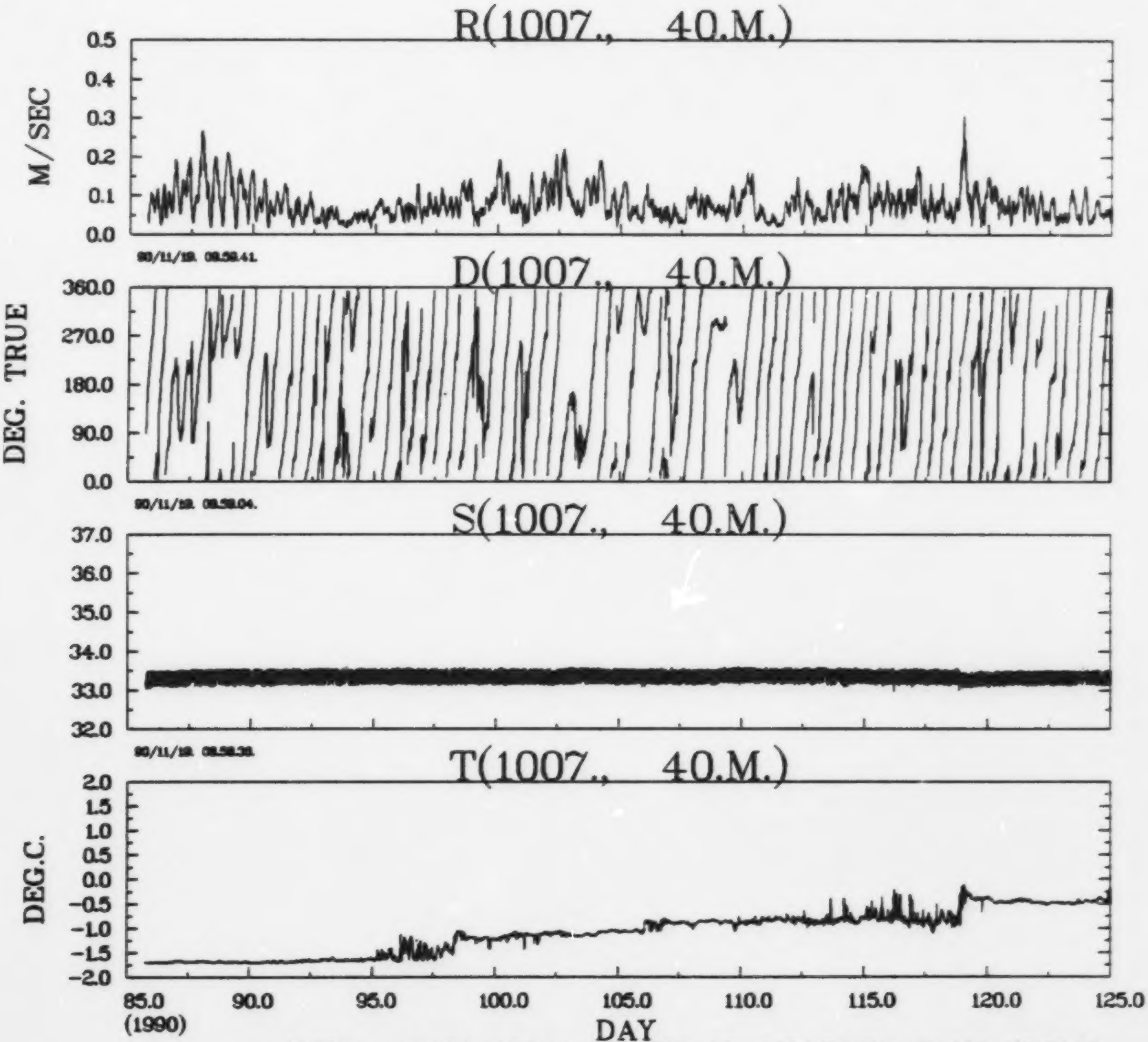
INST. 9071

90/11/21. 08.55.45.



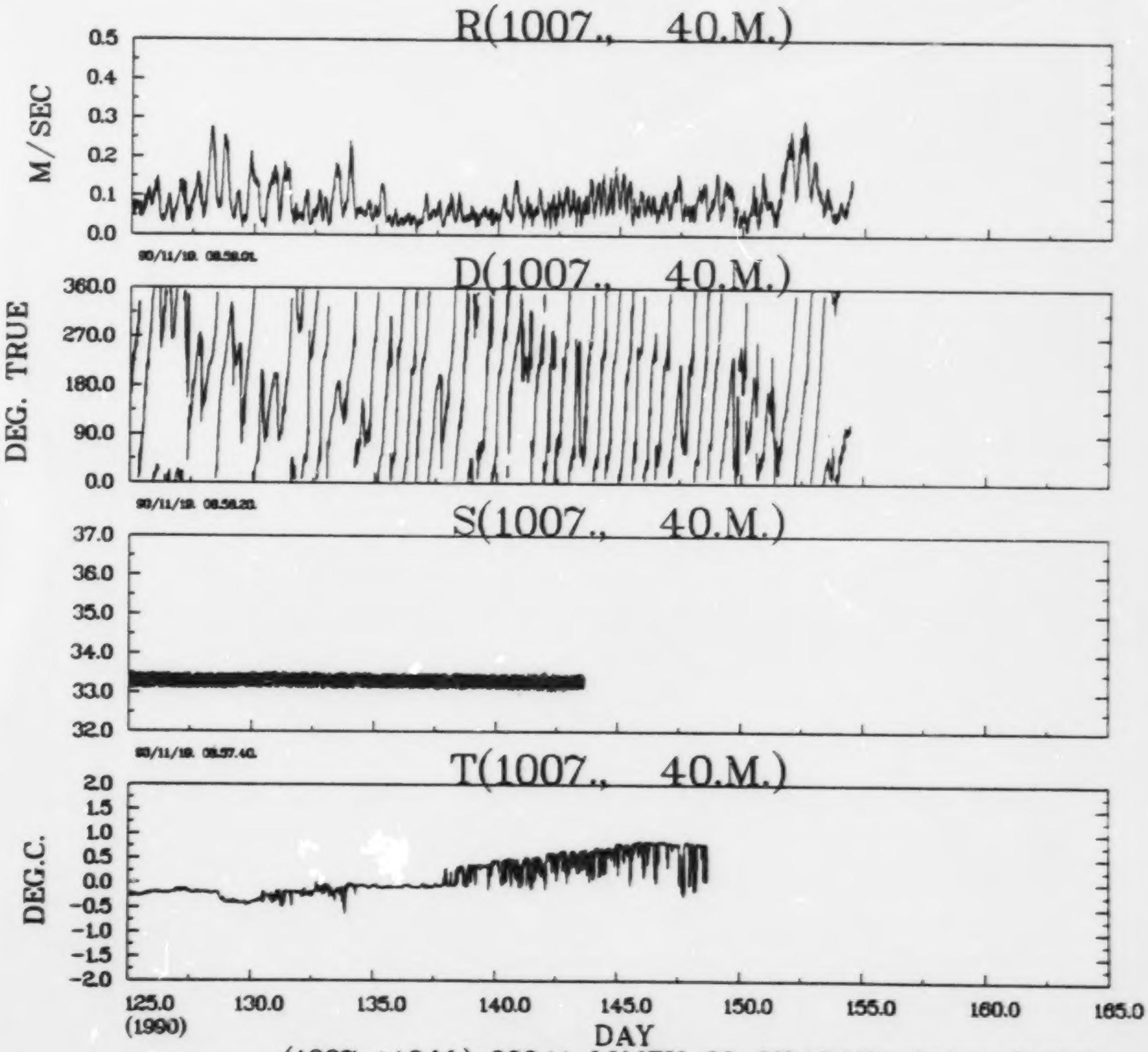
(1007.; 30.M.) 89041 LIMEX 90 CHARLES TANG (RCM7 9071)

INST. 9071
90/11/21. 09.35.40.



(1007.; 40.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 6404)

INST. 6404
90/11/19. 08.58.11.



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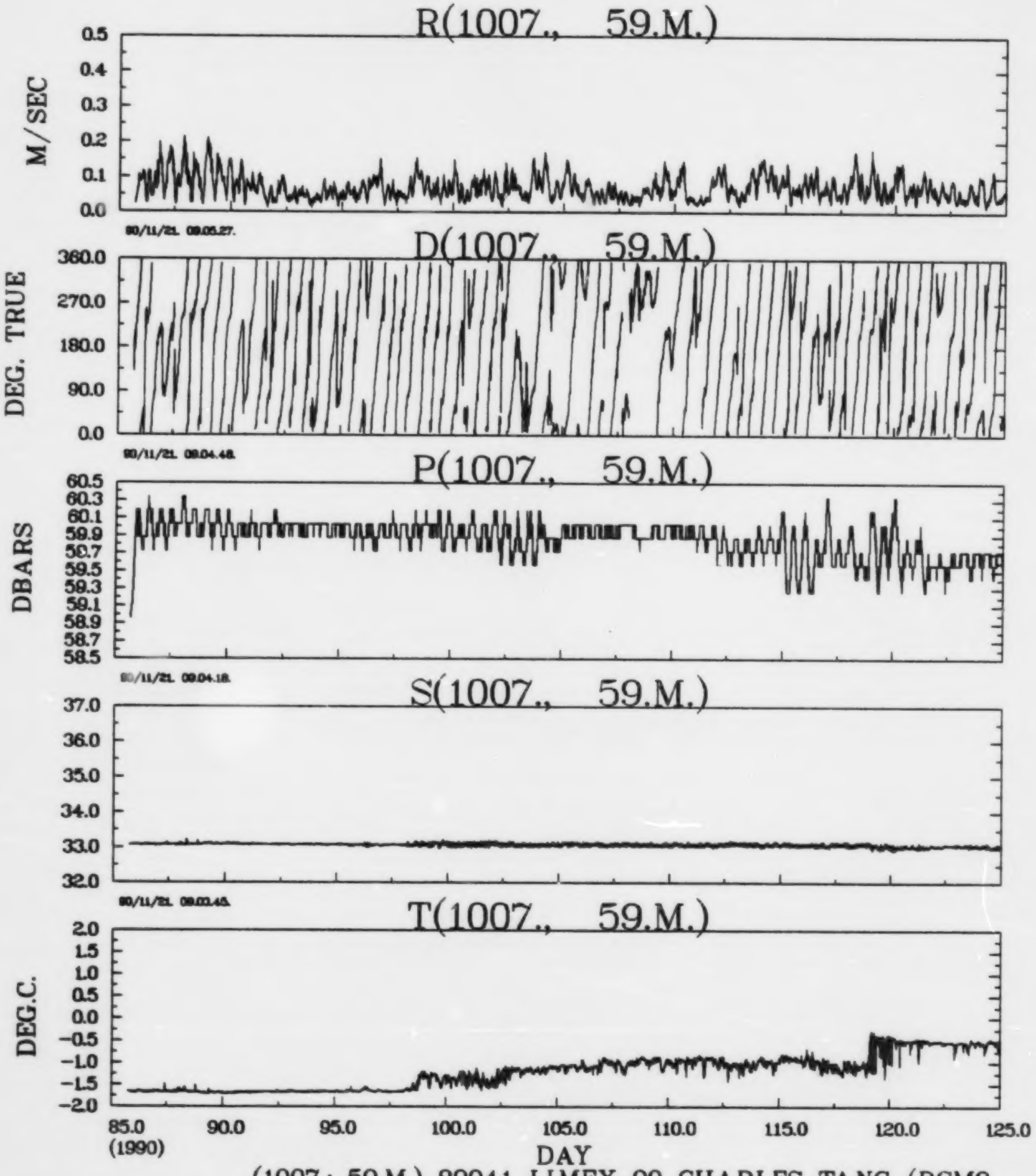
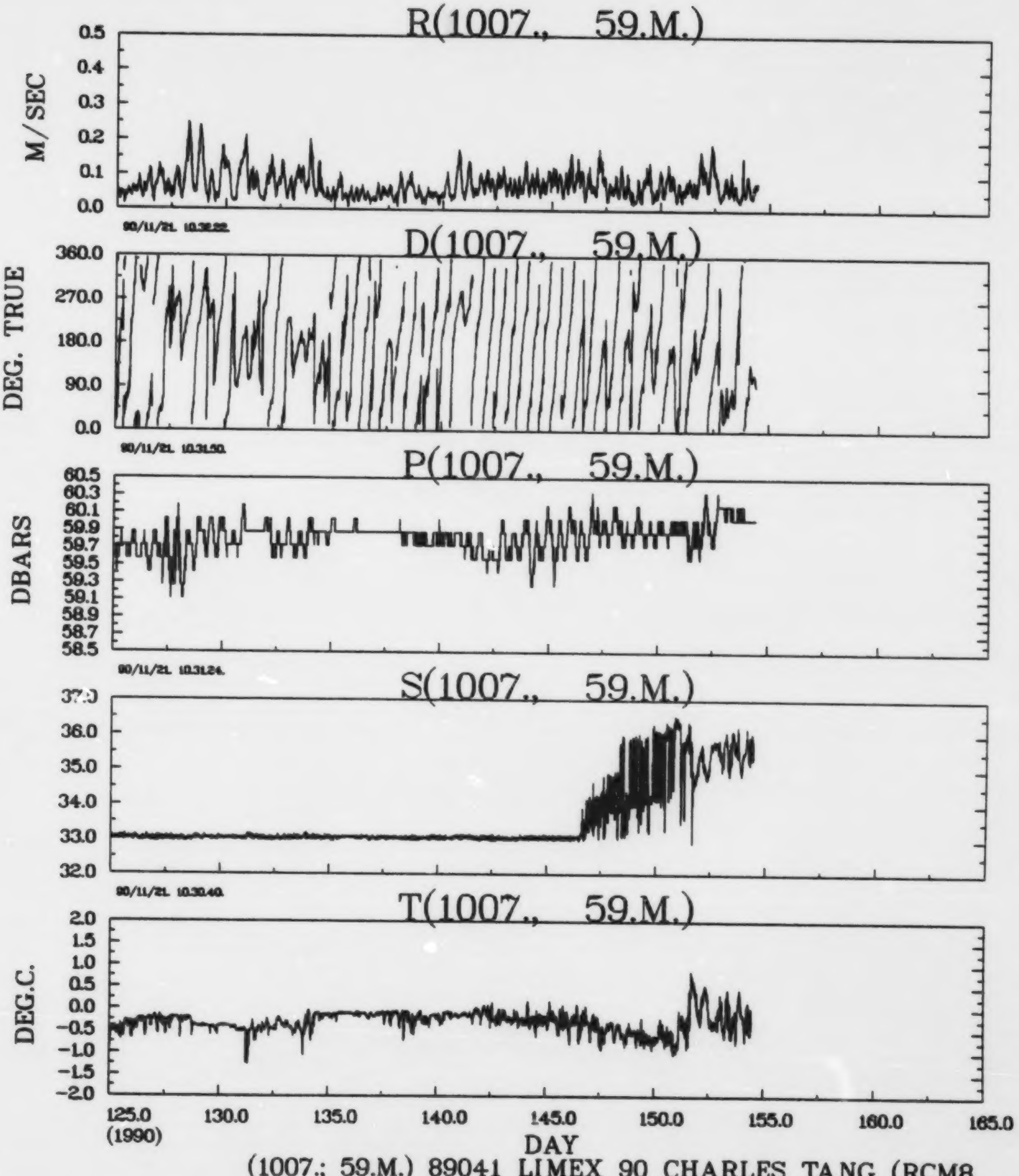


(1007.; 59.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 9354)

INST. 9354
90/11/21. 09.03.14.



(1007.; 59.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 9354)

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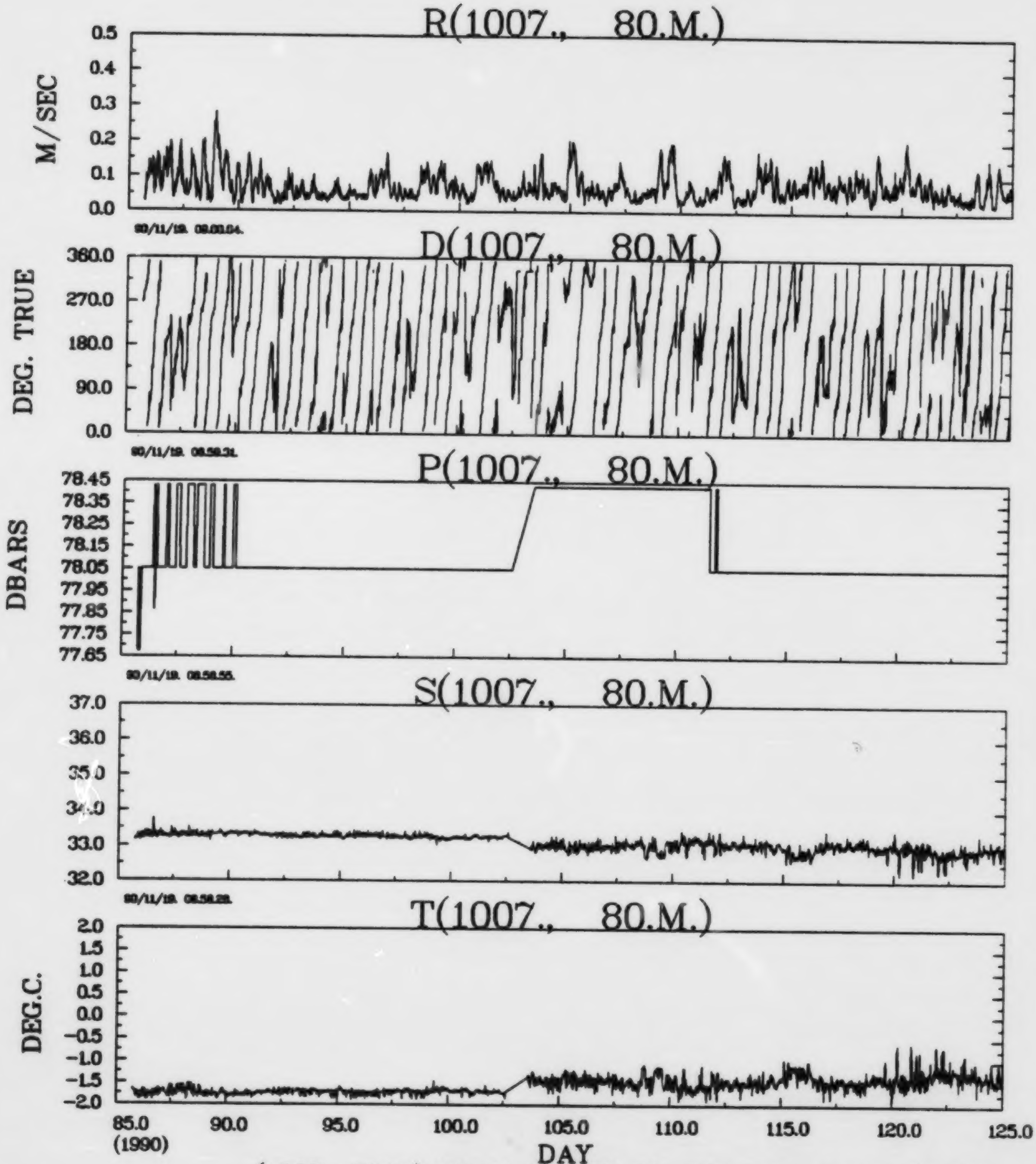
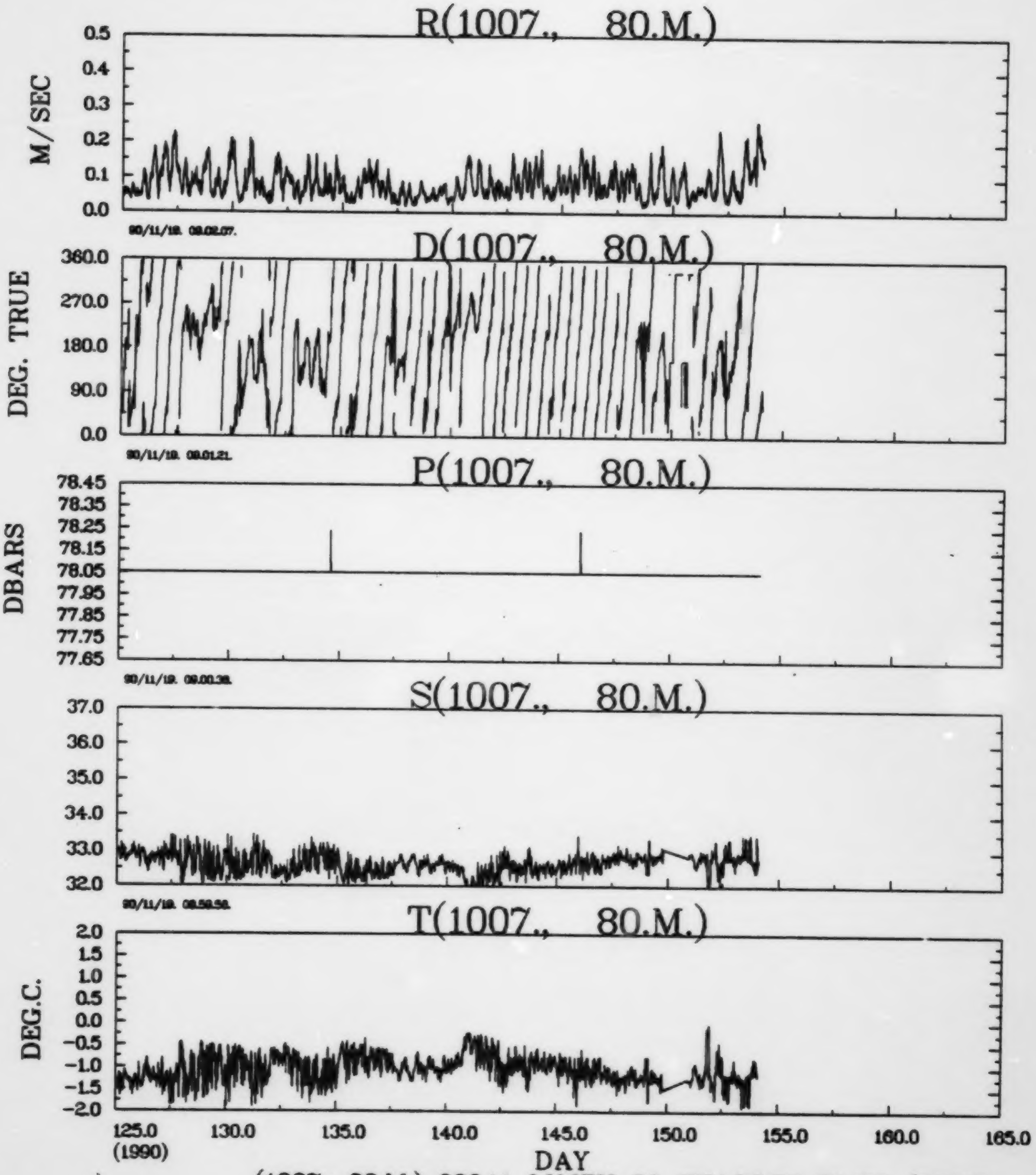


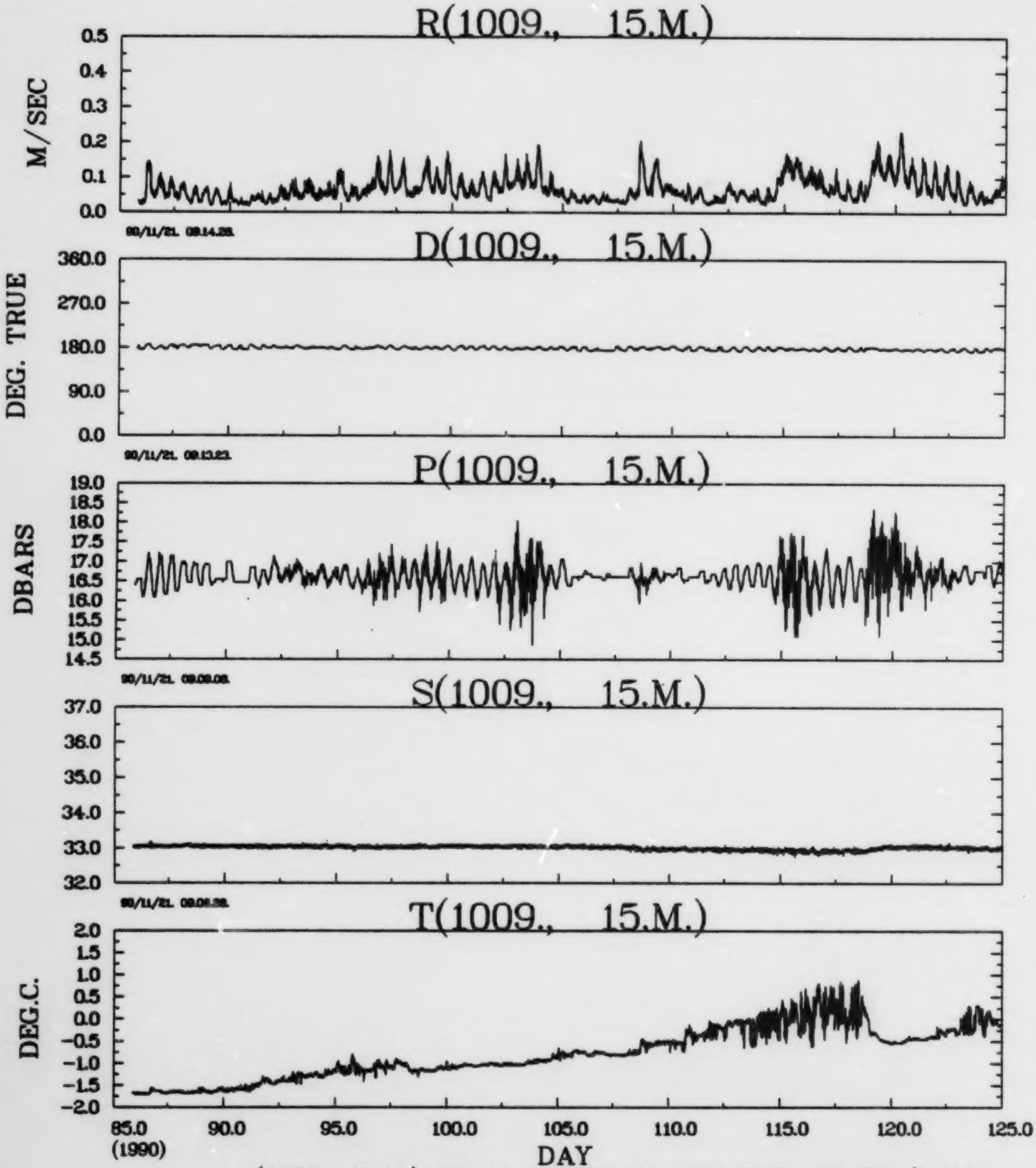
(1007.; 80.M.) 89041 LIMEX 90 CHARLES TANG (RCM5
4195 PADDLE WHEEL)

INST. 4195
90/11/19. 08.58.04.



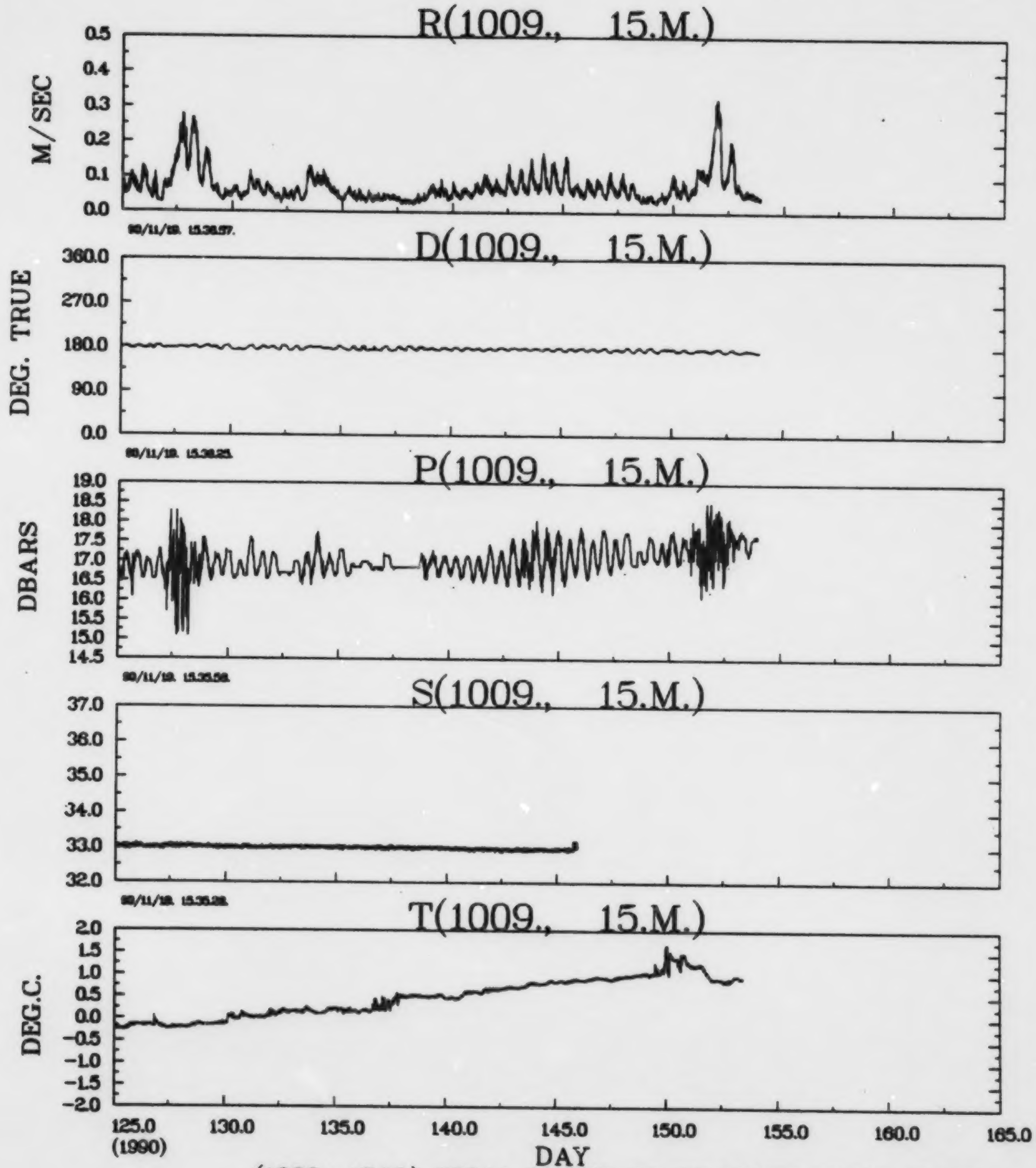
(1007.; 80.M.) 89041 LIMEX 90 CHARLES TANG (RCM5
4195 PADDLE WHEEL)

INST. 4195
90/11/19. 08.58.23.



(1009.; 15.M.) 89041 LIMEX 90 CHARLES TANG (RCM7 9078)

INST. 9078
90/11/21. 09.07.51.



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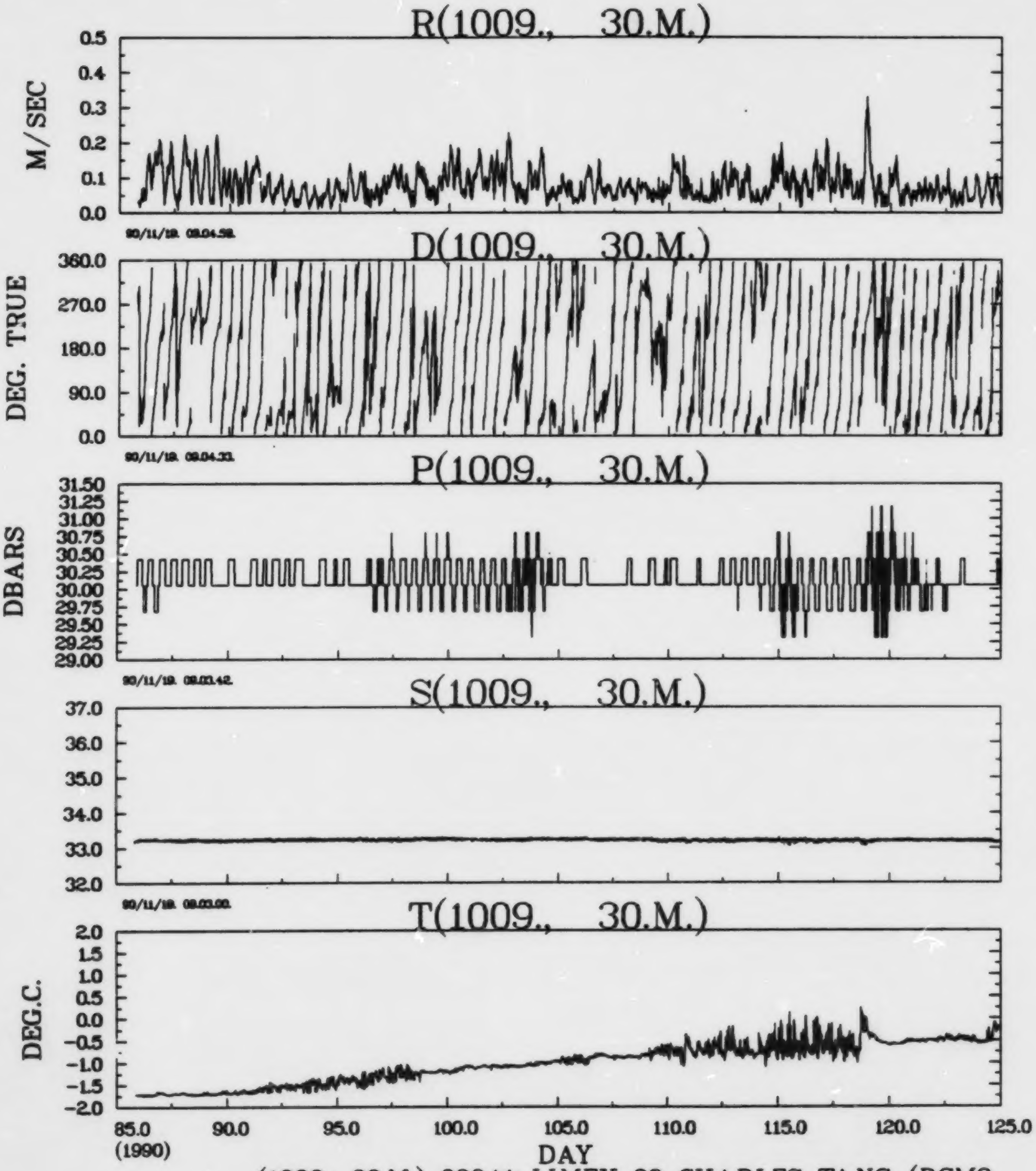
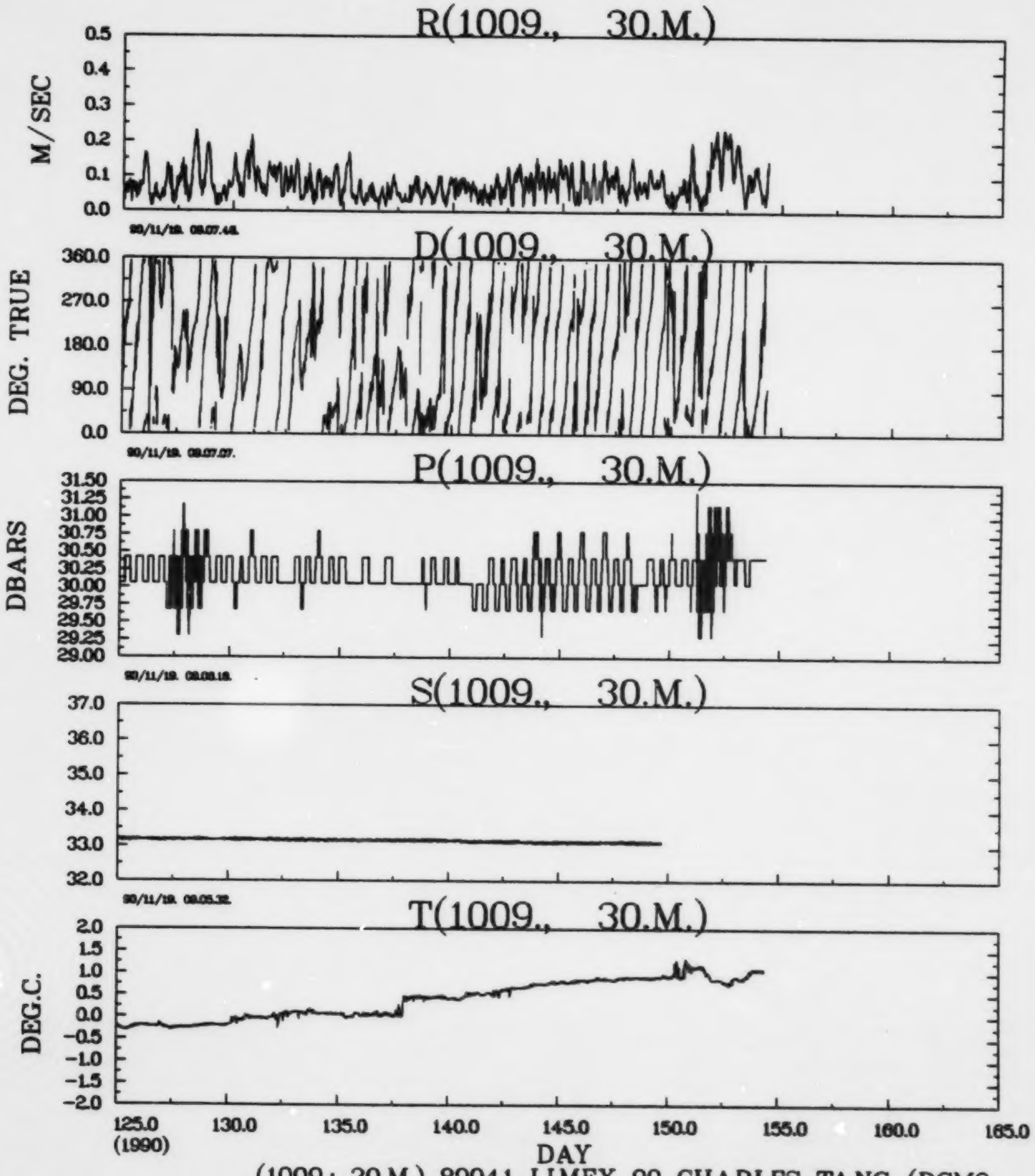


(1009.; 30.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 3392)

INST. 3392

90/11/19. 08.05.54.



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INST. 3392
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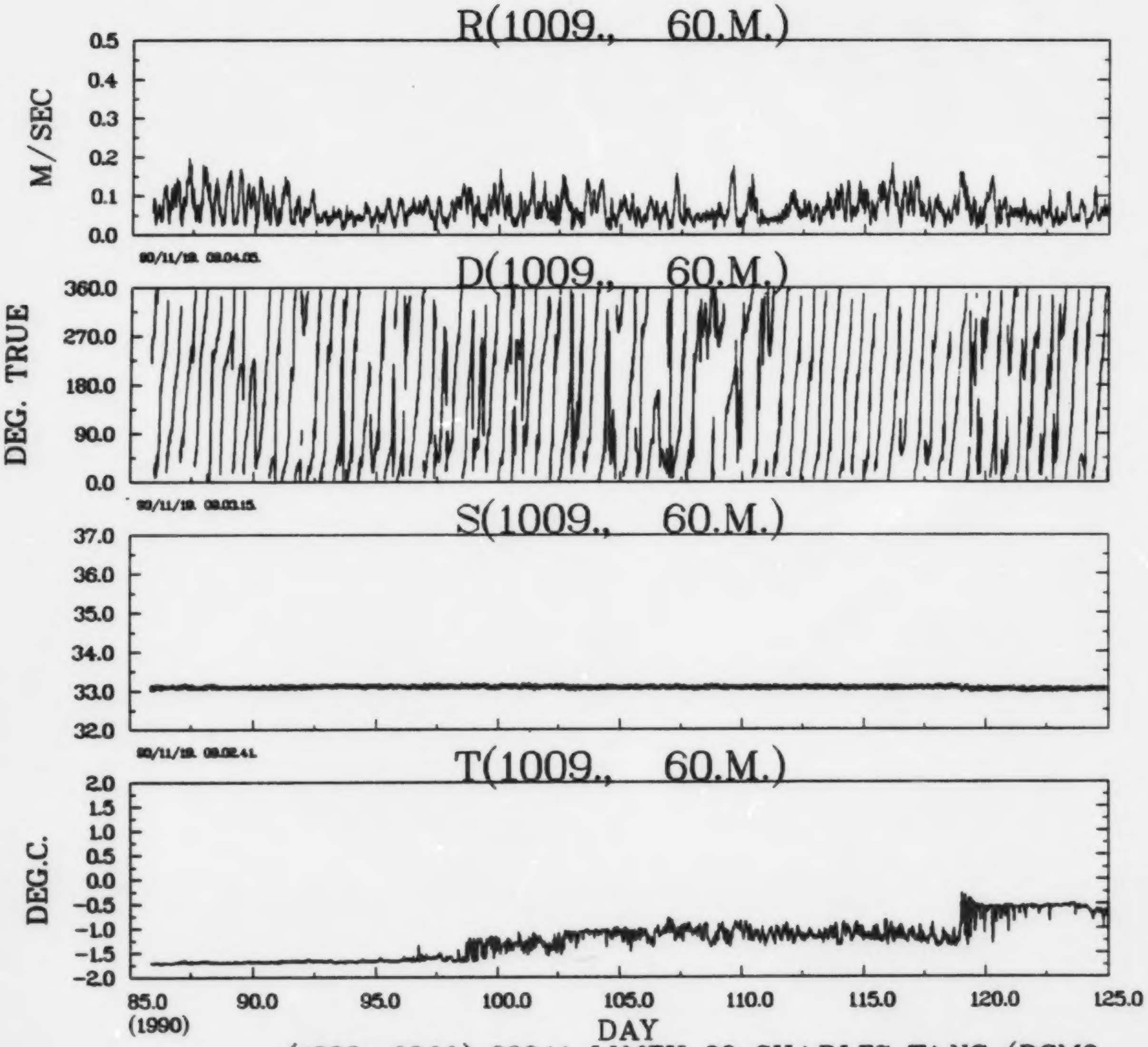

(1009.; 60.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 9328)

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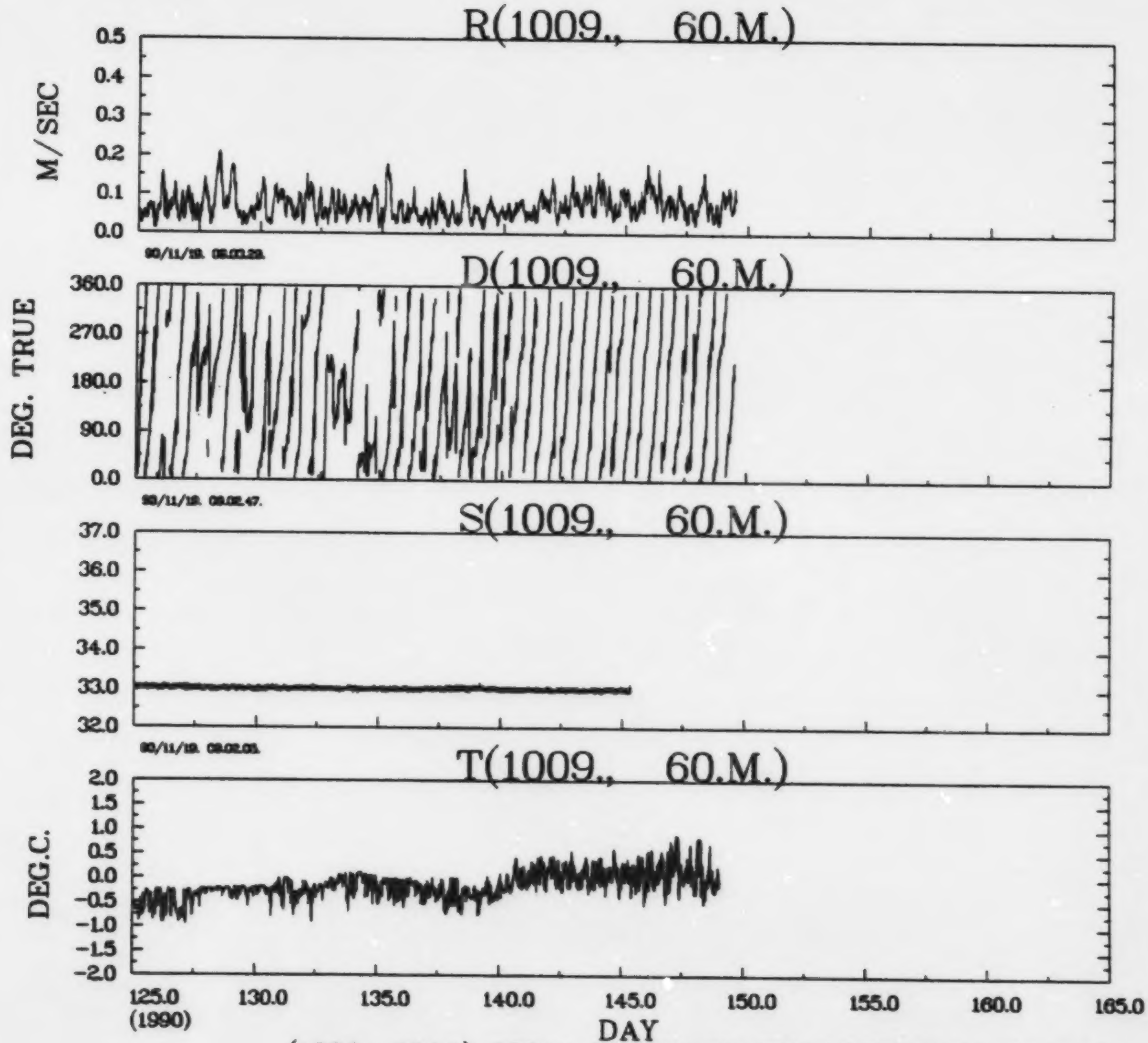
90/11/19. 09.02.02.



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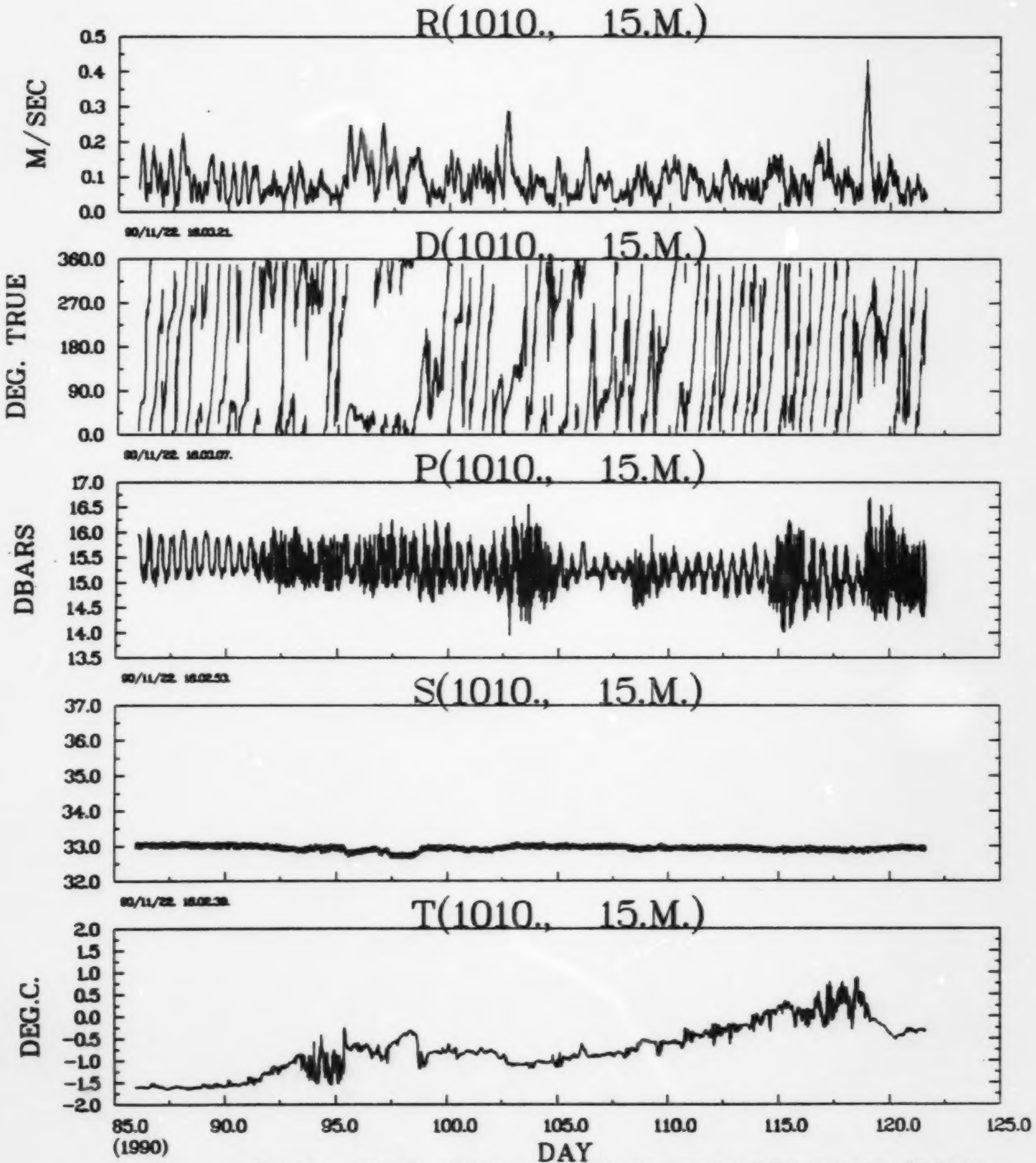
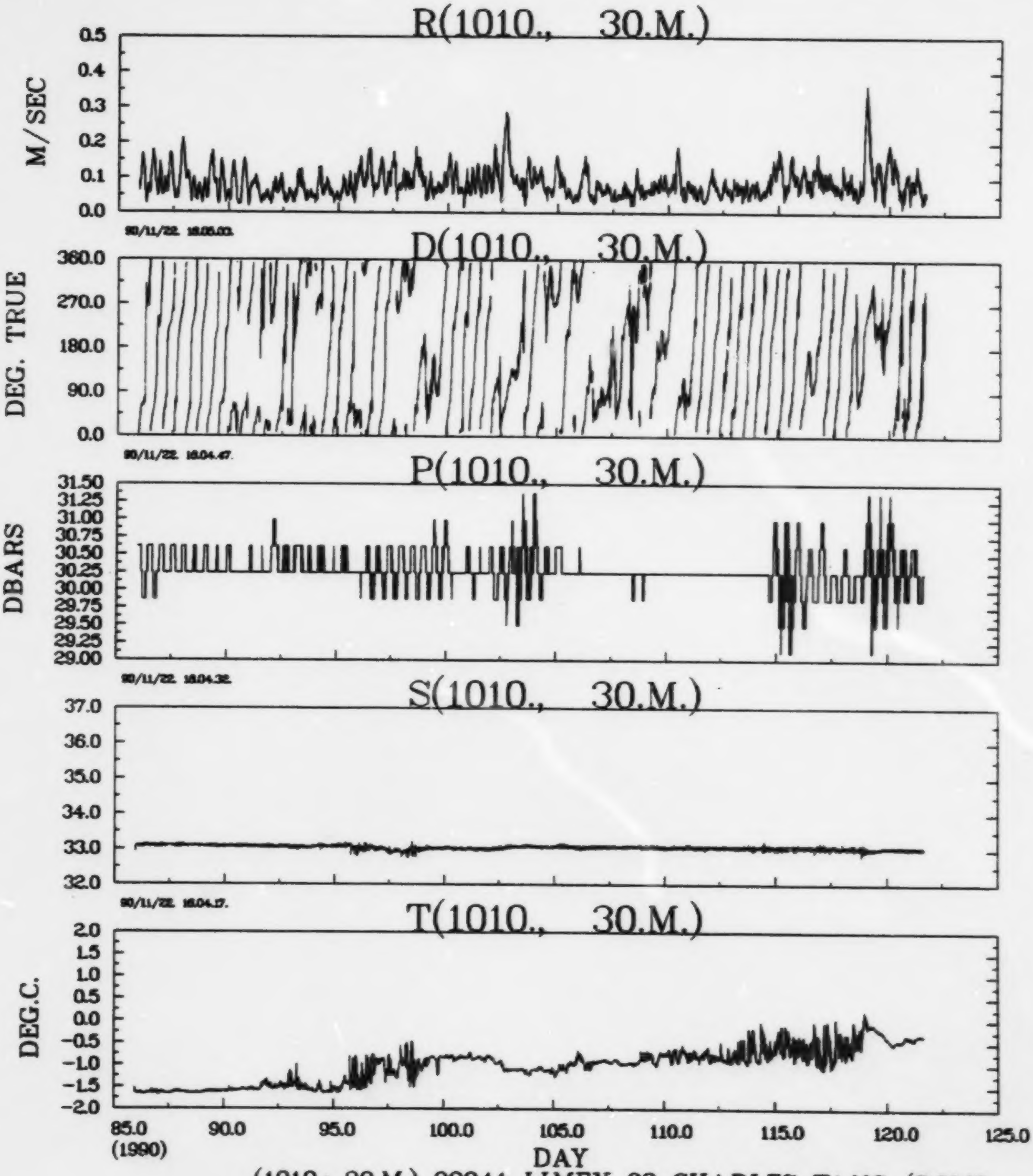
90/11/19. 09.01.14.



(1010.; 15.M.) 89041 LIMEX 90 CHARLES TANG (RCM7 9145)

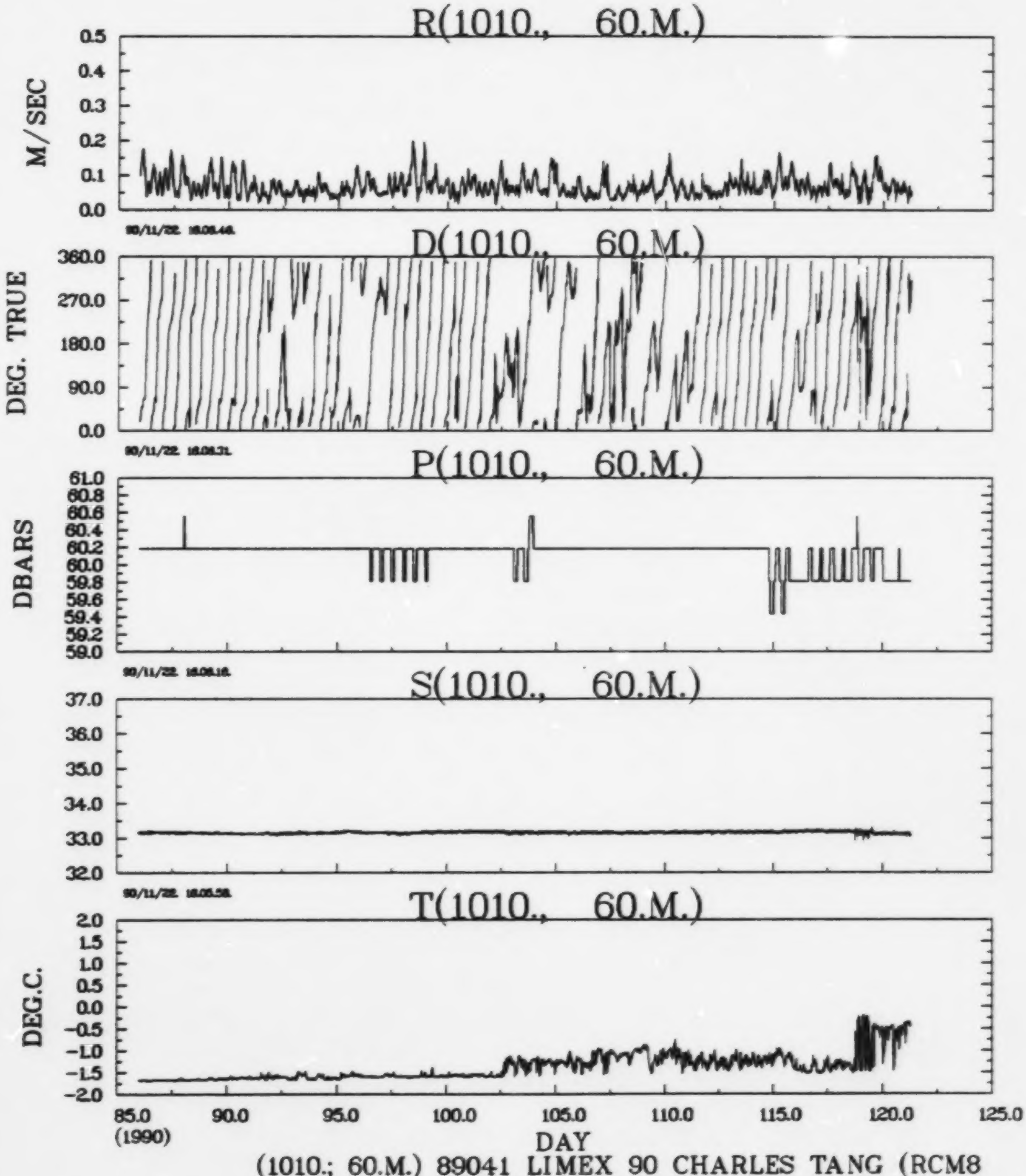
INST. 9145
90/11/22. 18.02.23.



(1010.; 30.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 9607)

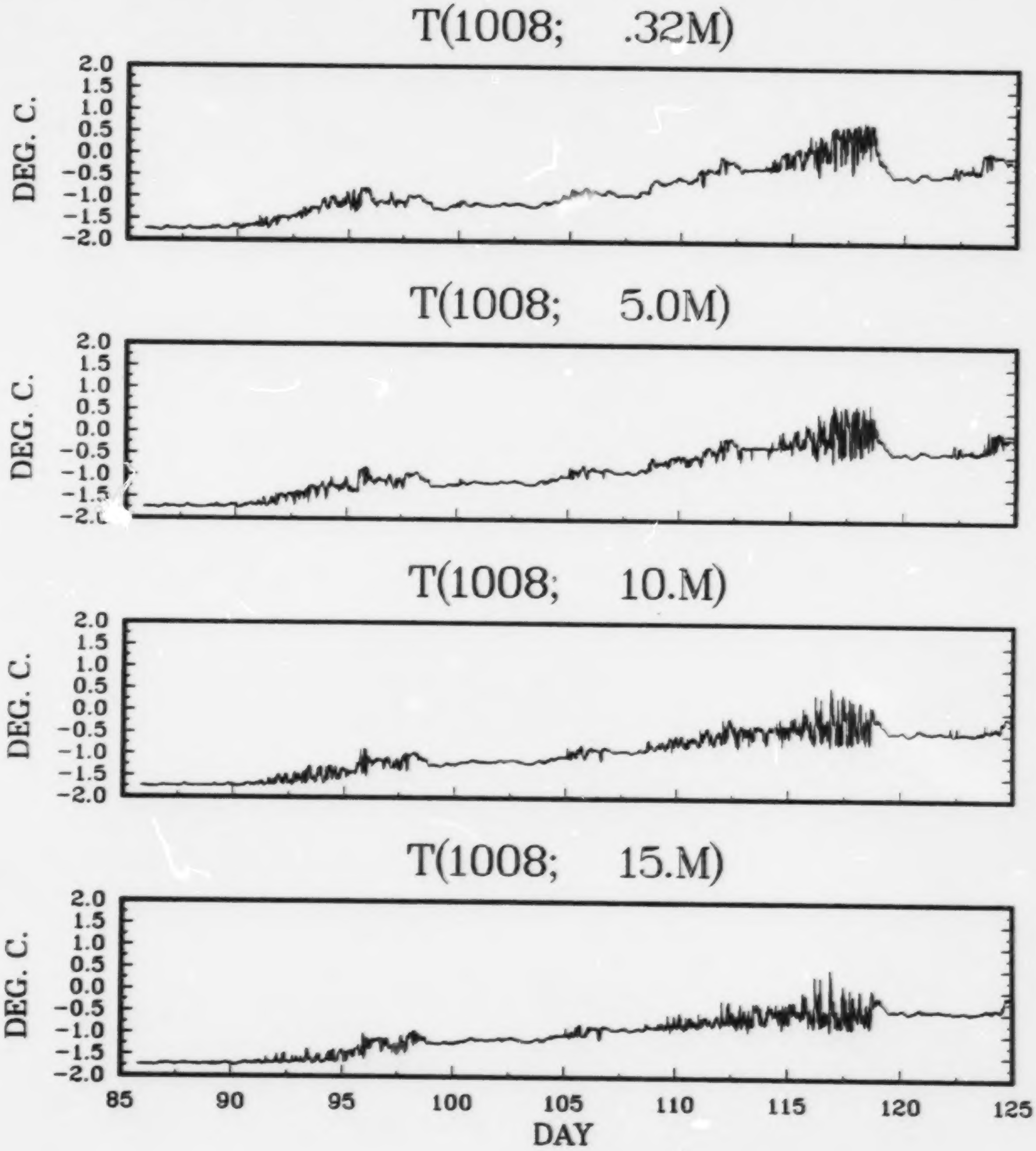
INST. 9607

90/11/22. 18.04.01.



(1010.; 60.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 9610)

INST. 9610
90/11/22. 16.05.42.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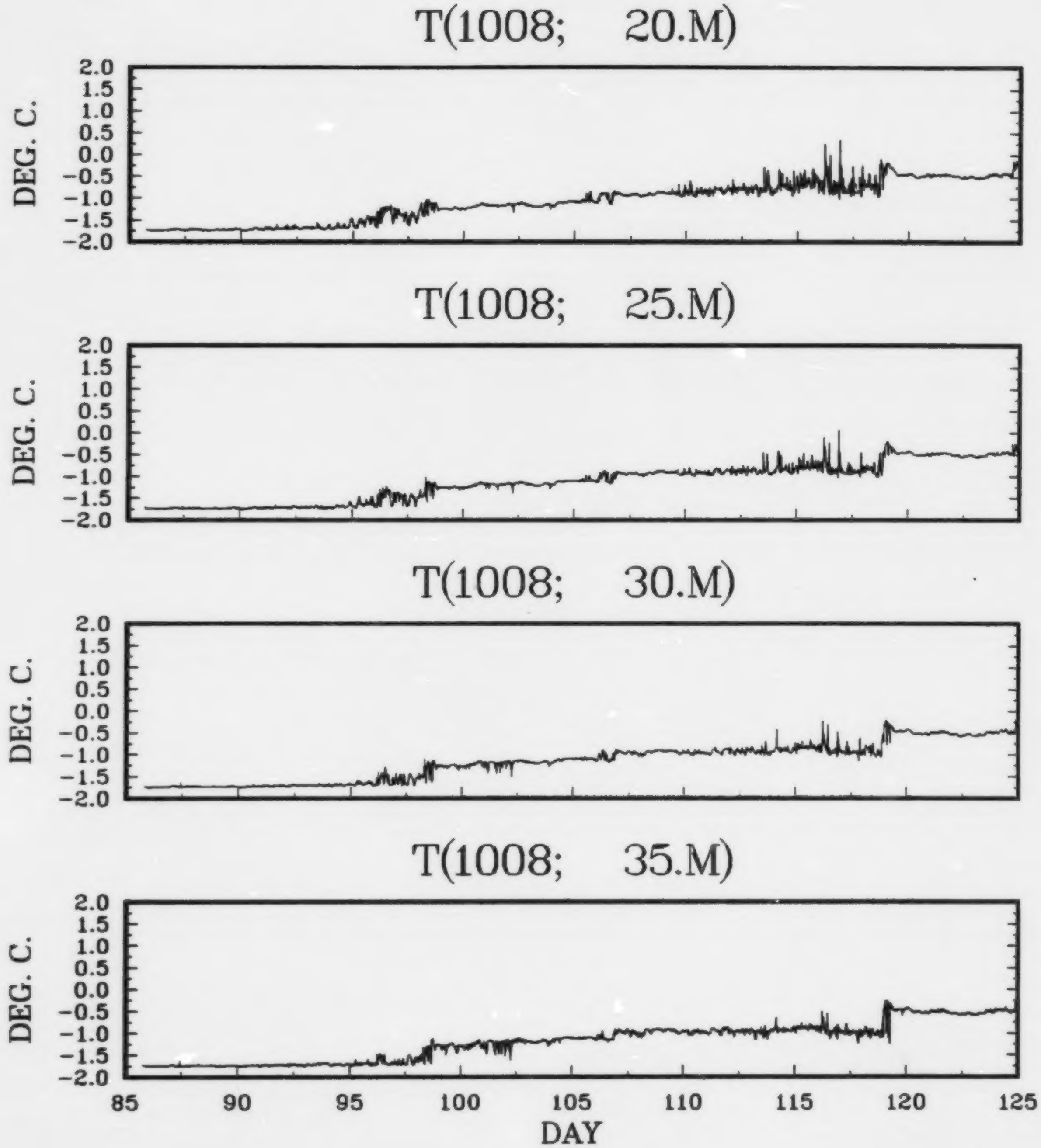
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T(1008; 25.M)
T(1008; 30.M)
T(1008; 35.M)
DEG. C.
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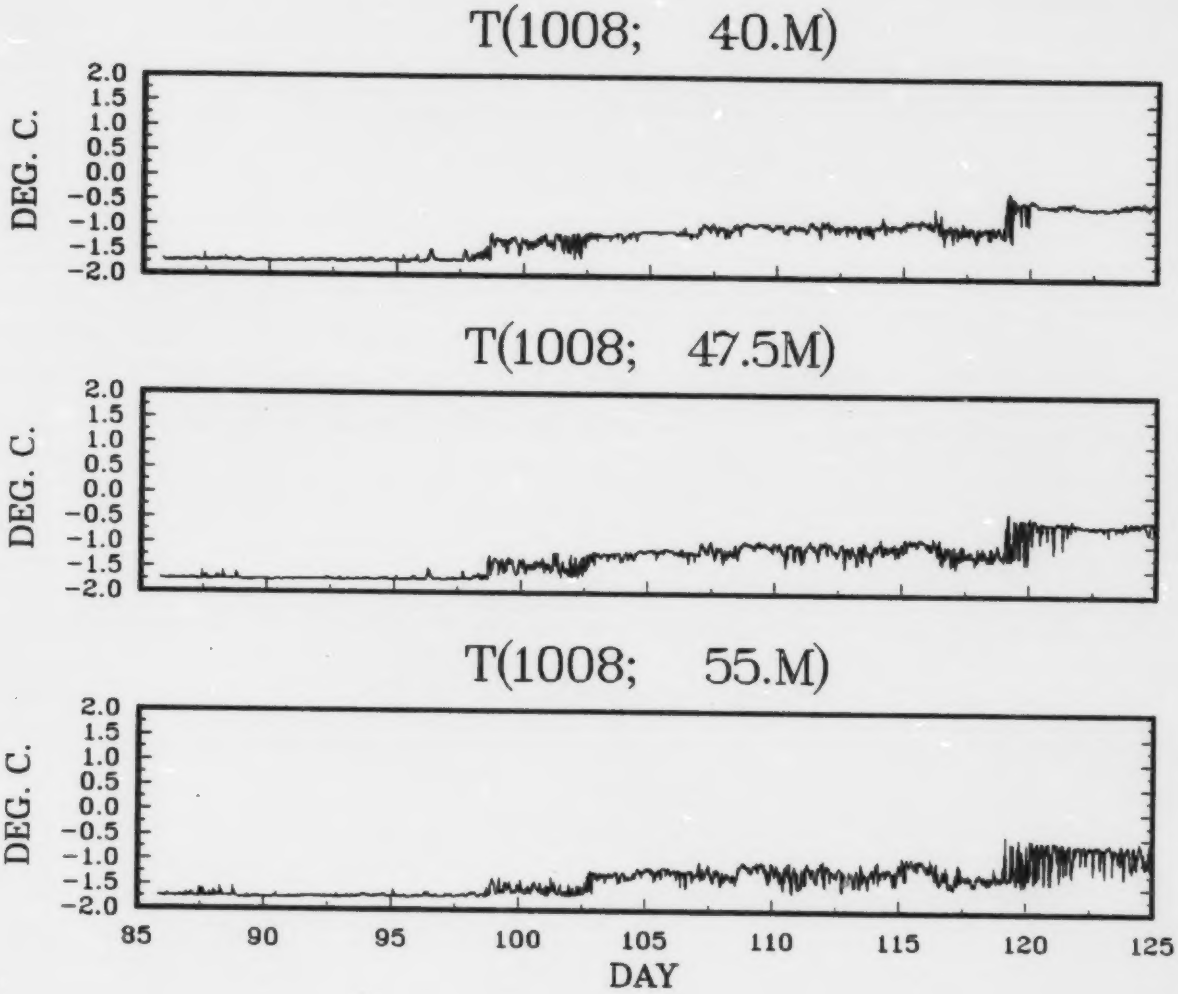
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
85
90
95
100
105
110
115
120
125
DAY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T(1008;   47.5M)
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-2.0
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95
100
105
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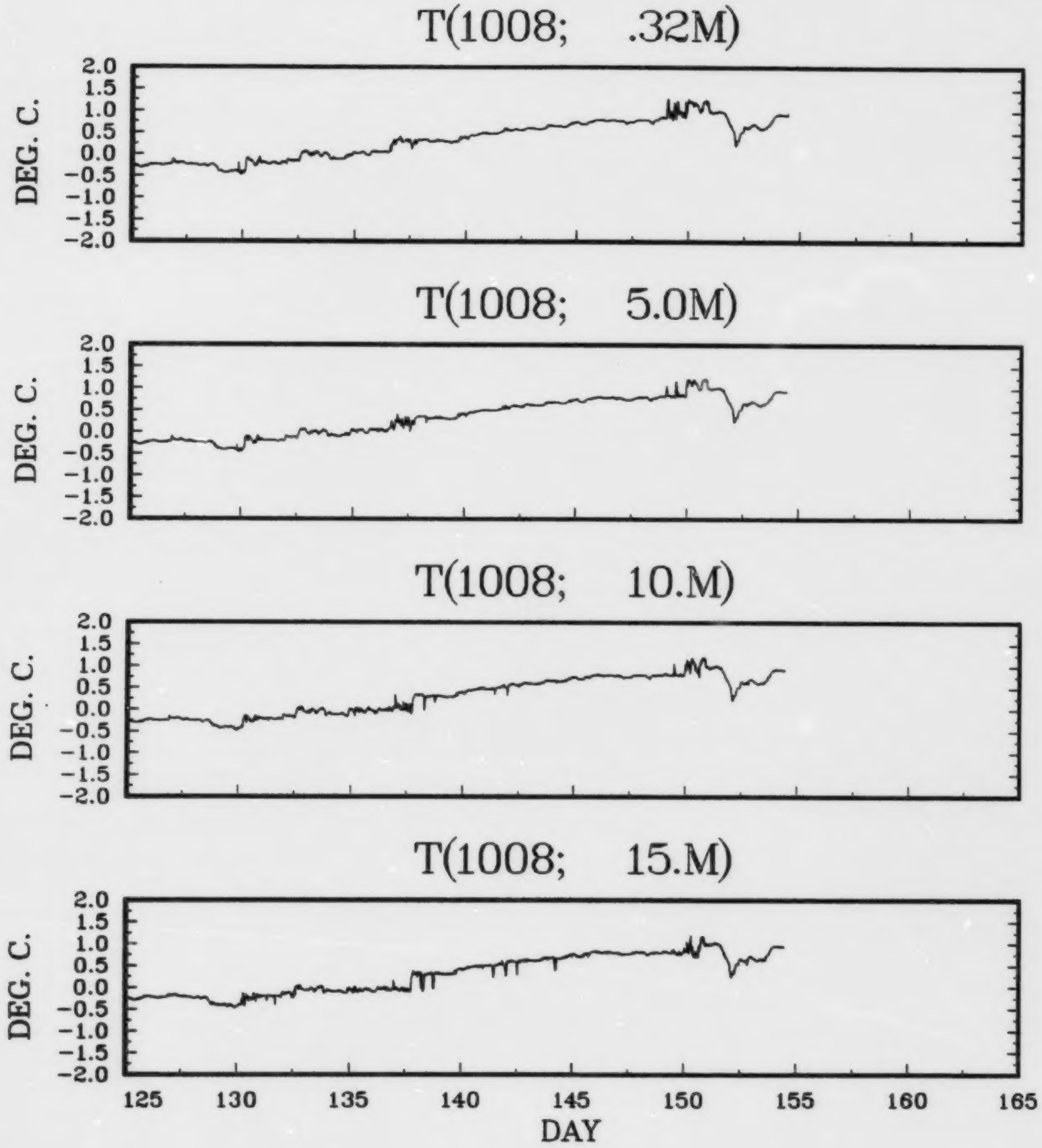
115
120
125
DAY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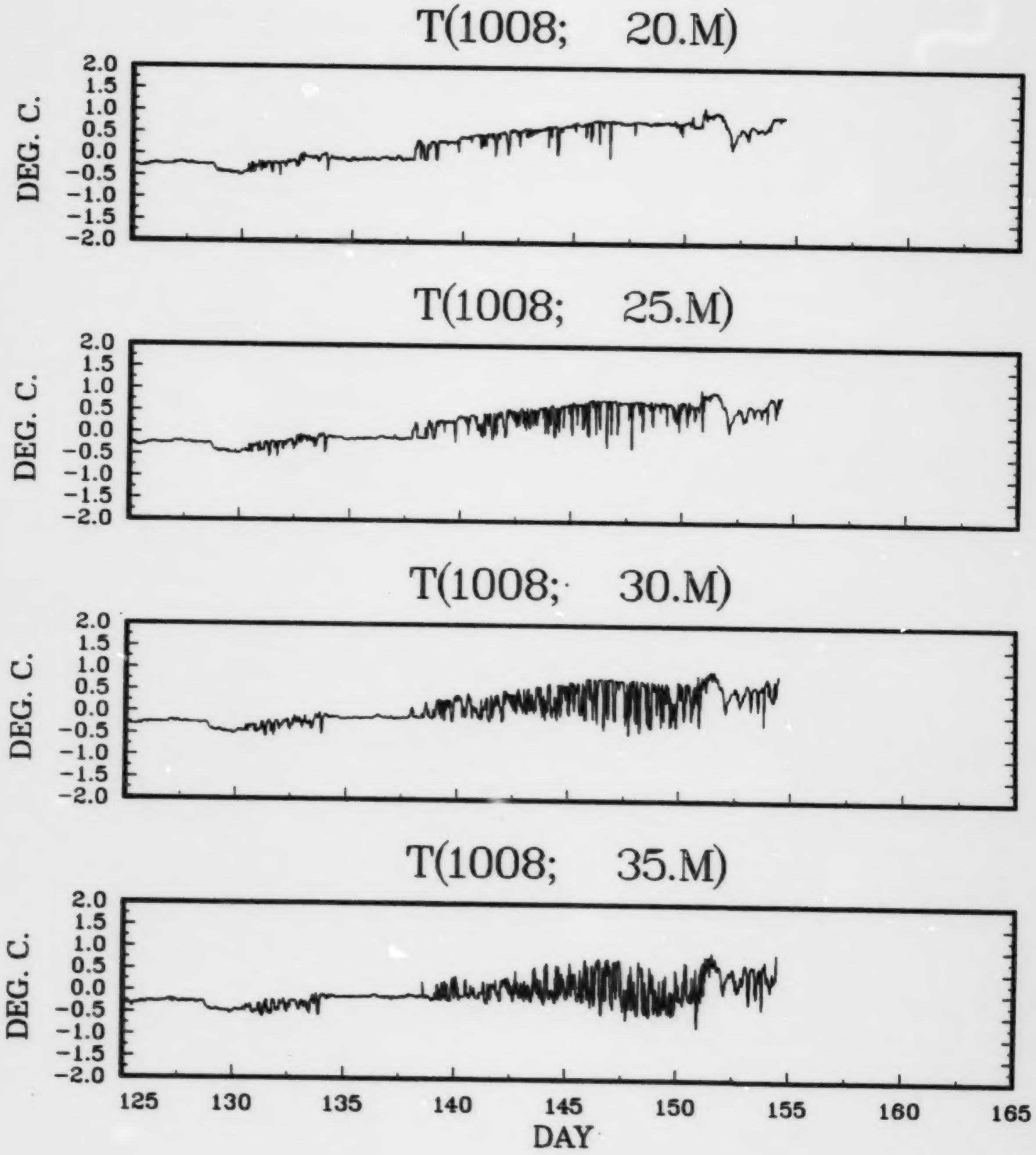

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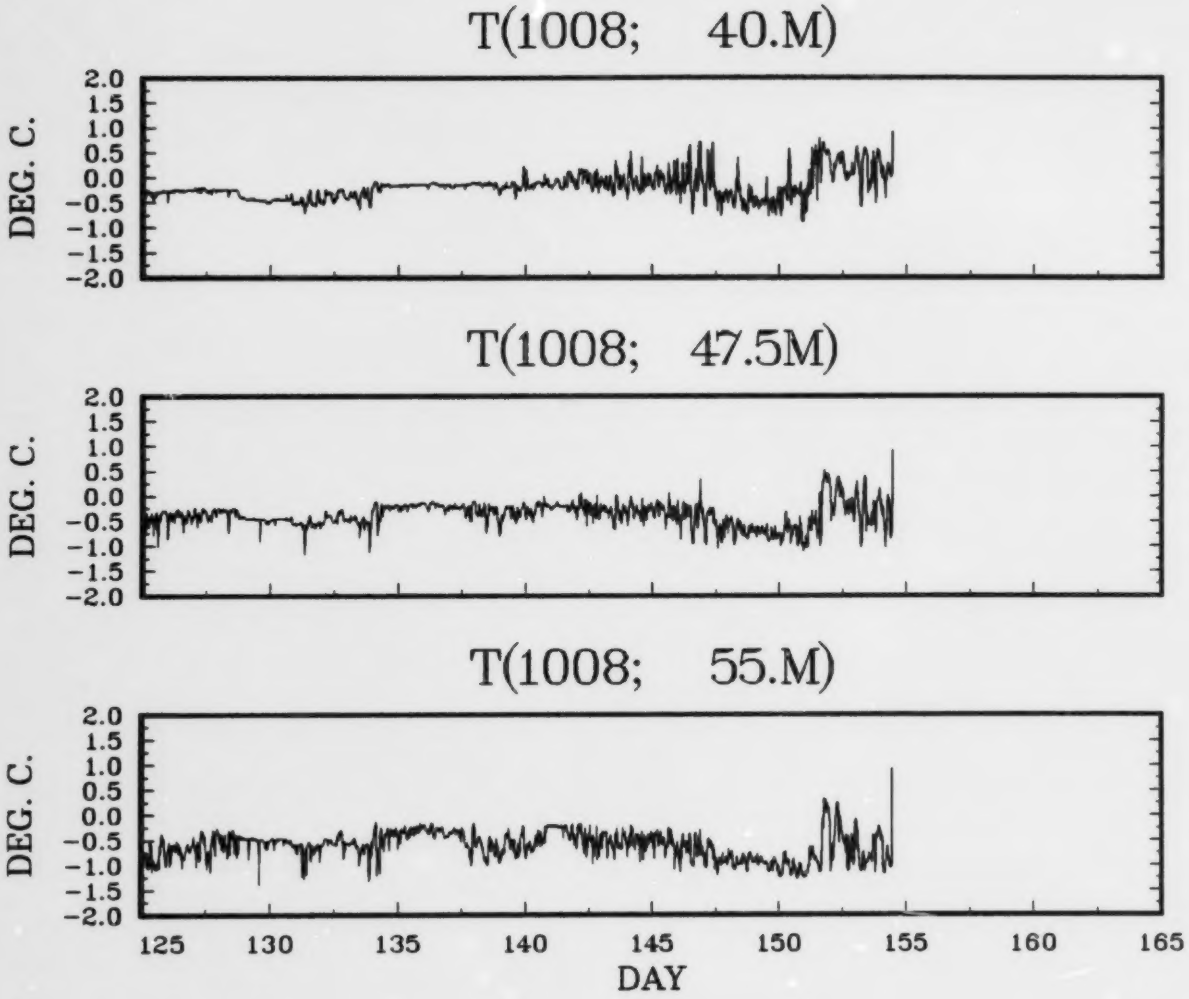
T(1008; 25.M)

T(1008; 30.M)

T(1008; 35.M)


T(1008; 40.M)
T(1008; 47.5M)
T(1008; 55.M)
DEG. C.
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1.0
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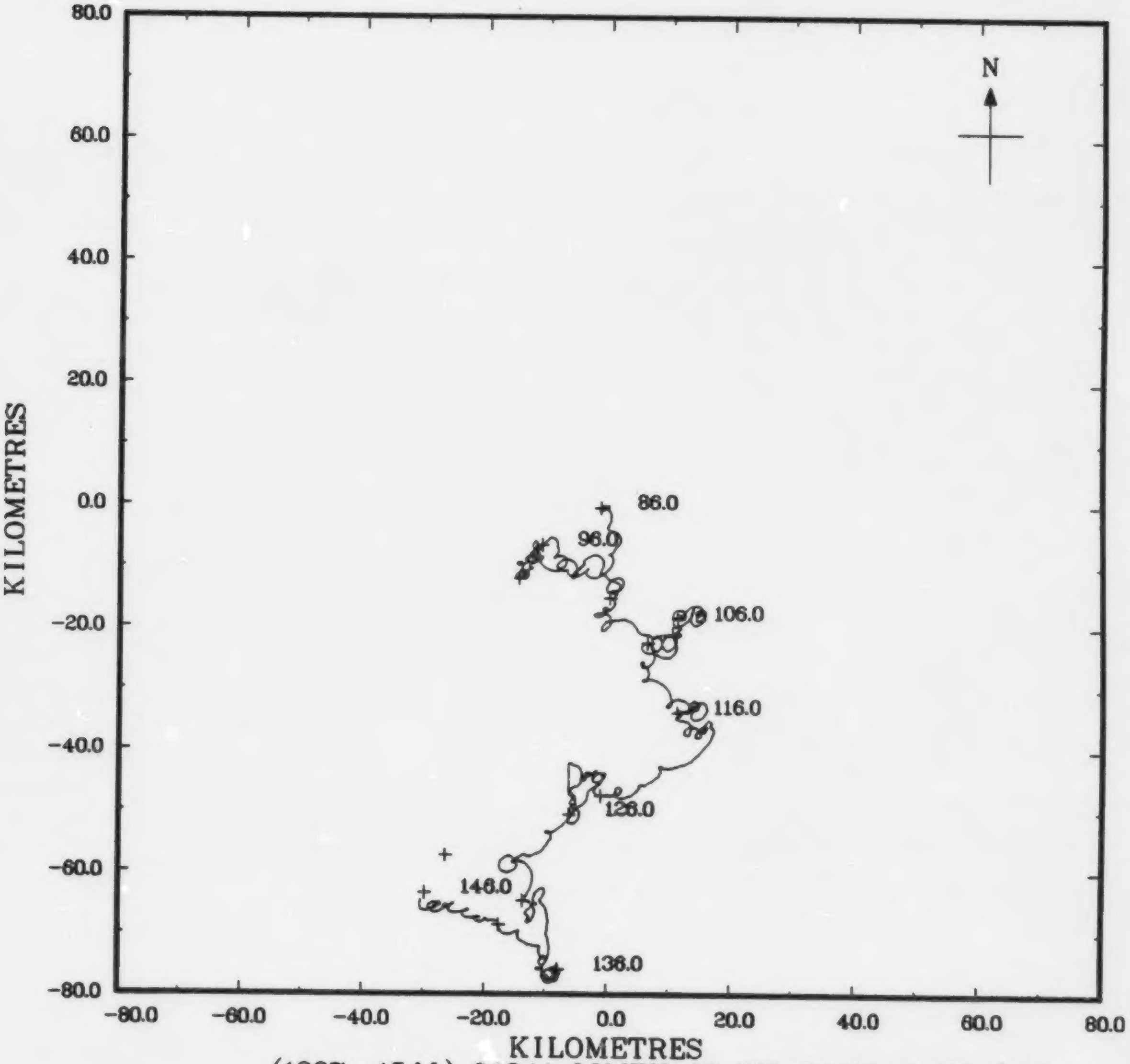
0.0
−0.5
−1.0
−1.5
−2.0
125
130
135
140
145
150
155
160
165
DAY

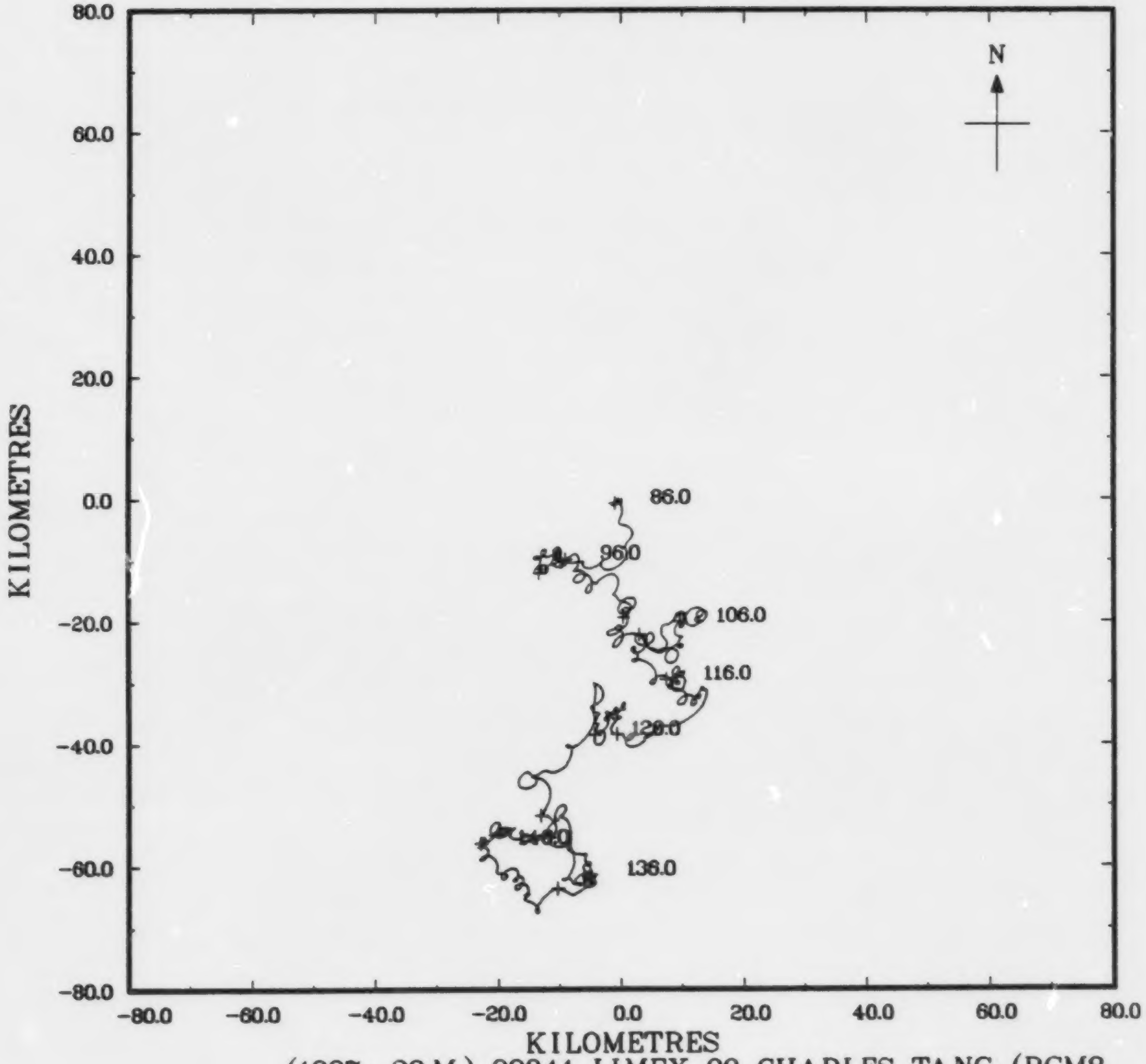
STN.1007, 15 M.



(1007.; 15.M.) 89041 LIMEX 90 CHARLES TANG (RCM5
6400 PADDLE WHEEL)

INST. 6400
90/11/21. 11.46.40.

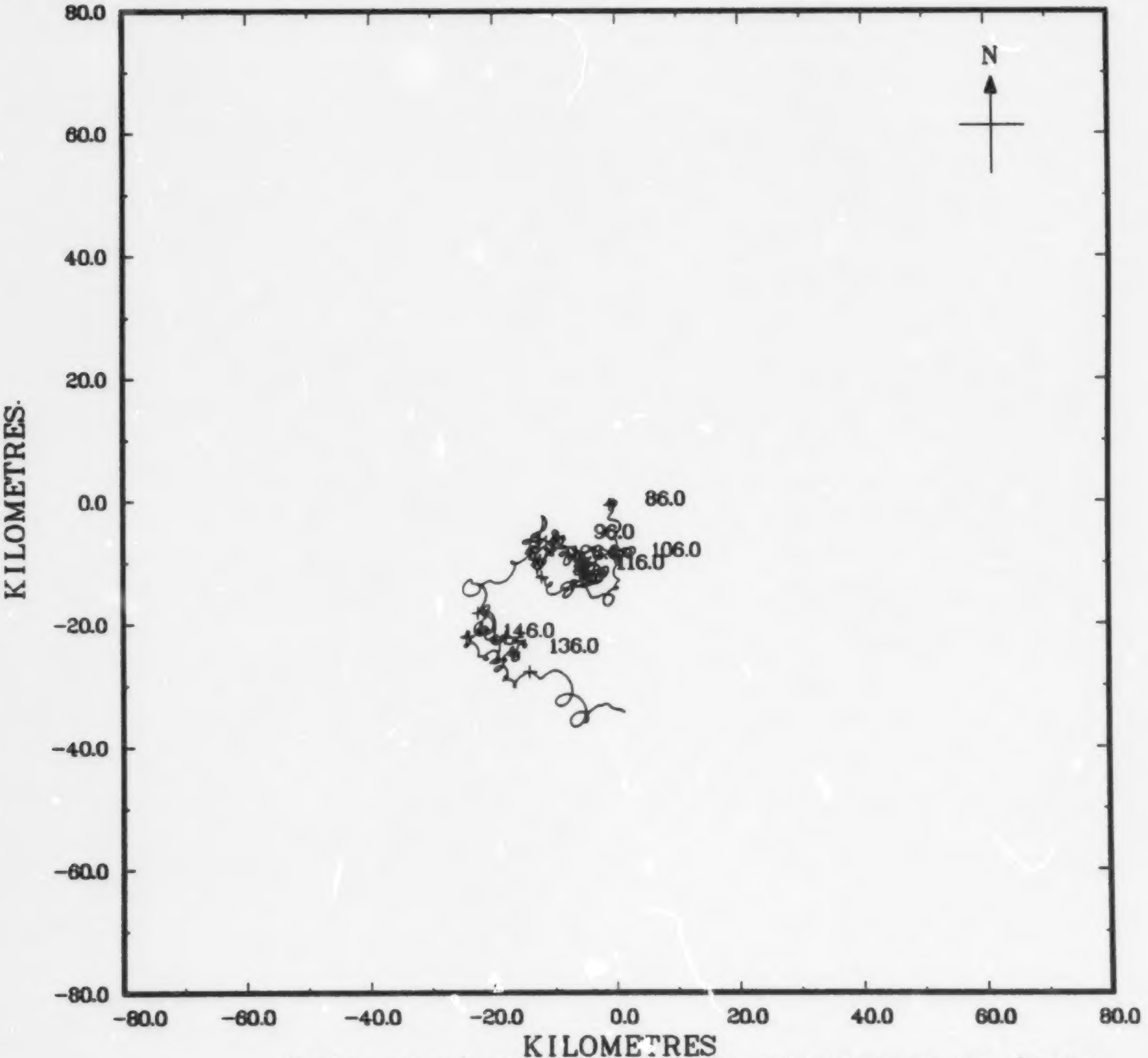
STN.1007,   20 M.



(1007.; 20.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 3300)

INST. 3300
90/11/21. 11.47.13.

STN.1007, 30 M.

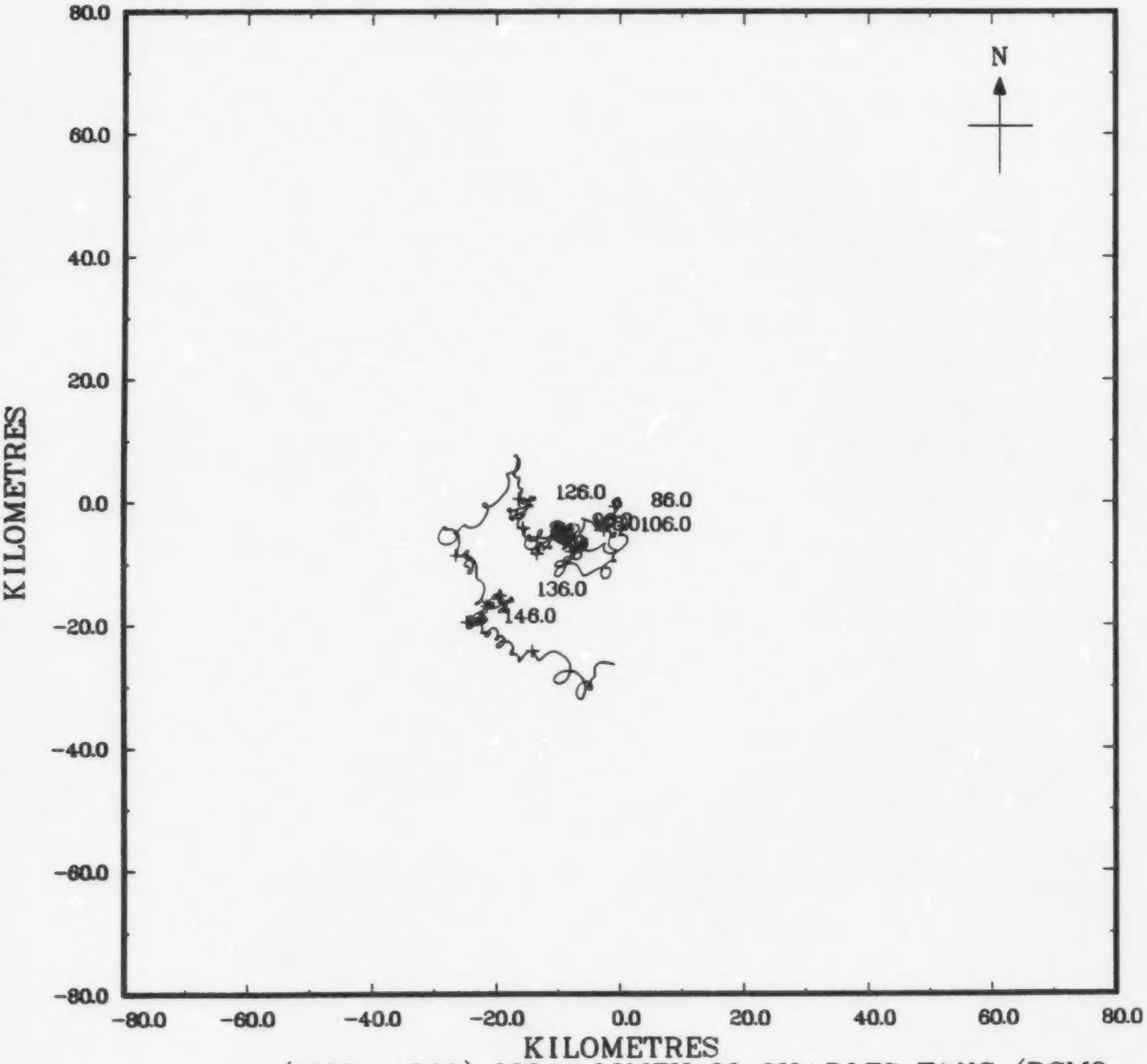


(1007.; 30.M.) 89041 LIMEX 90 CHARLES TANG (RCM7 9071)

INST. 9071

90/11/21. 11.48.47.

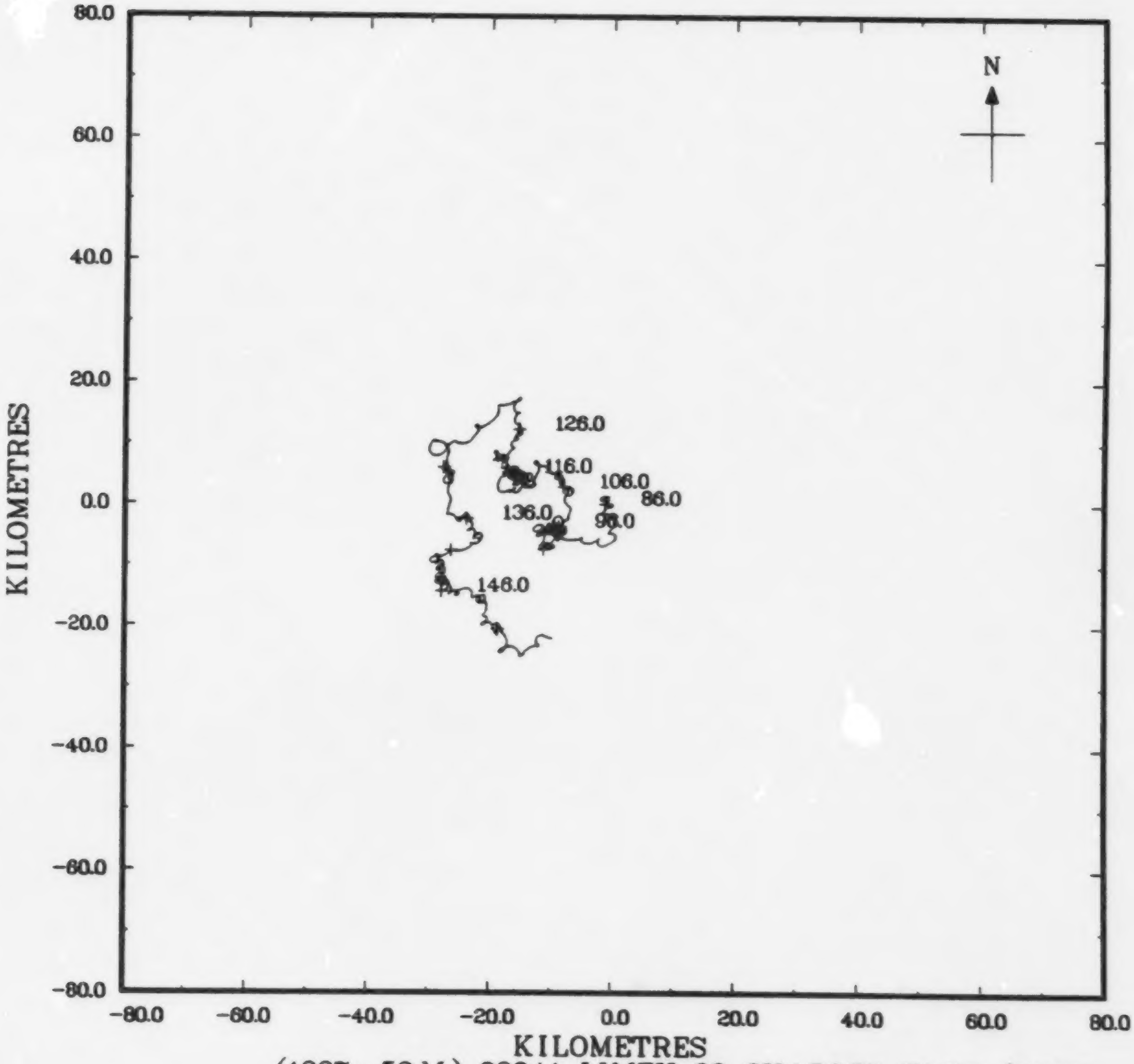
STN.1007, 40 M.



(1007.; 40.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 6404)

INST. 6404
90/11/21. 11.50.18.

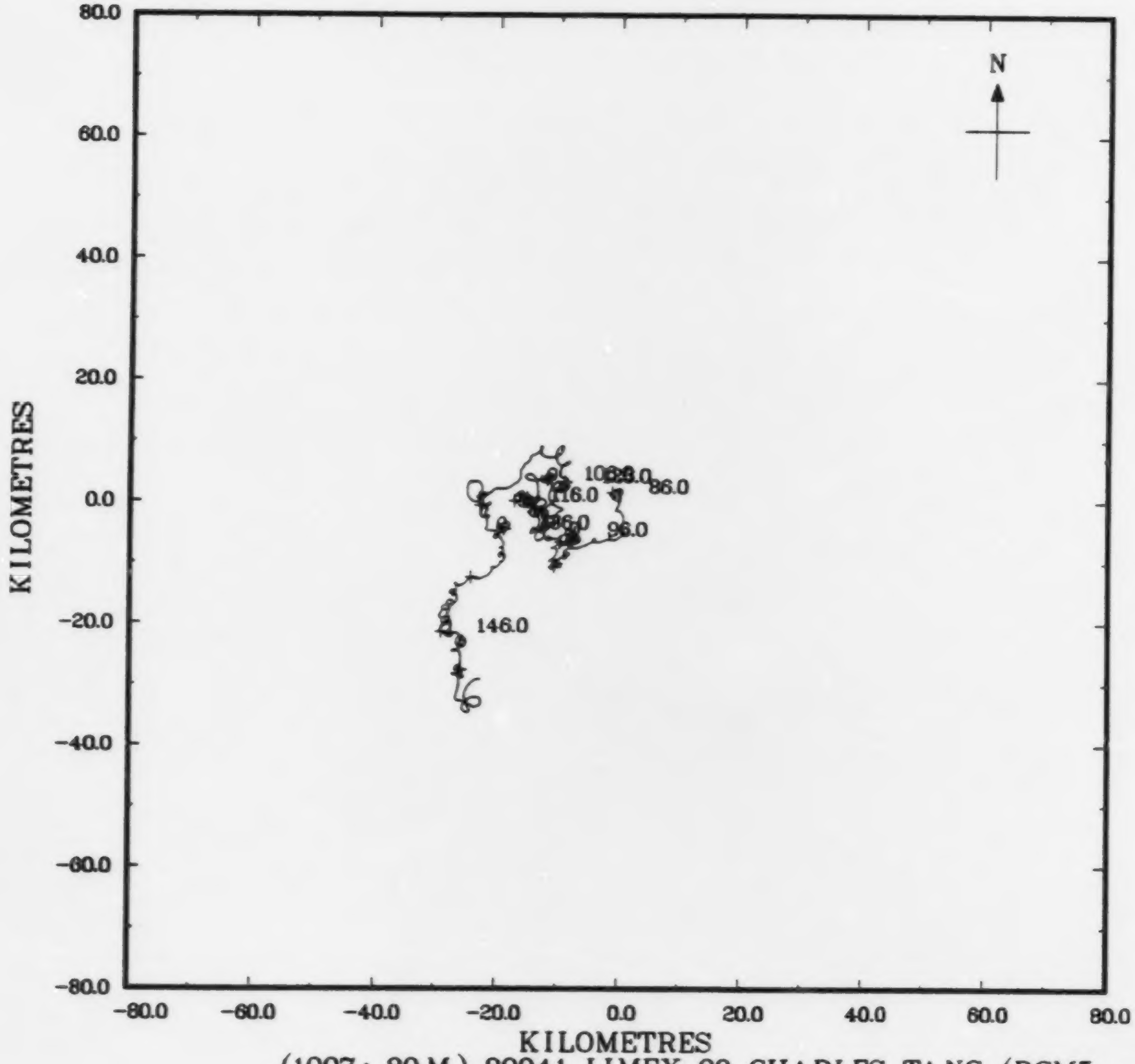
STN.1007, 59 M.



(1007.; 59.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 9354)

INST. 9354
90/11/21. 11.54.03.

STN.1007,   80 M.

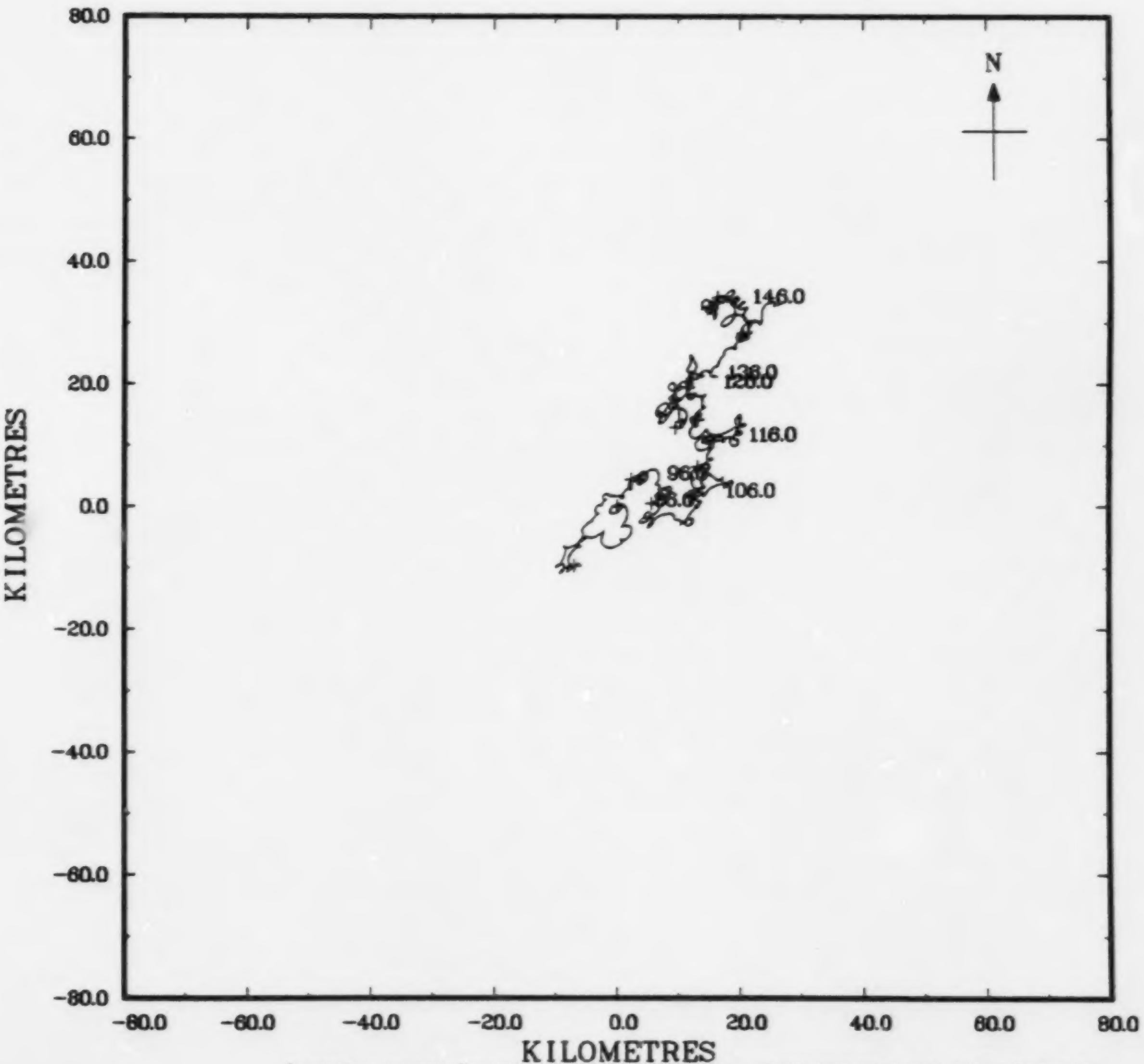


(1007.; 80.M.) 89041 LIMEX 90 CHARLES TANG (RCM5 4195 PADDLE WHEEL)

INST. 4195

90/11/21. 11.58.17.

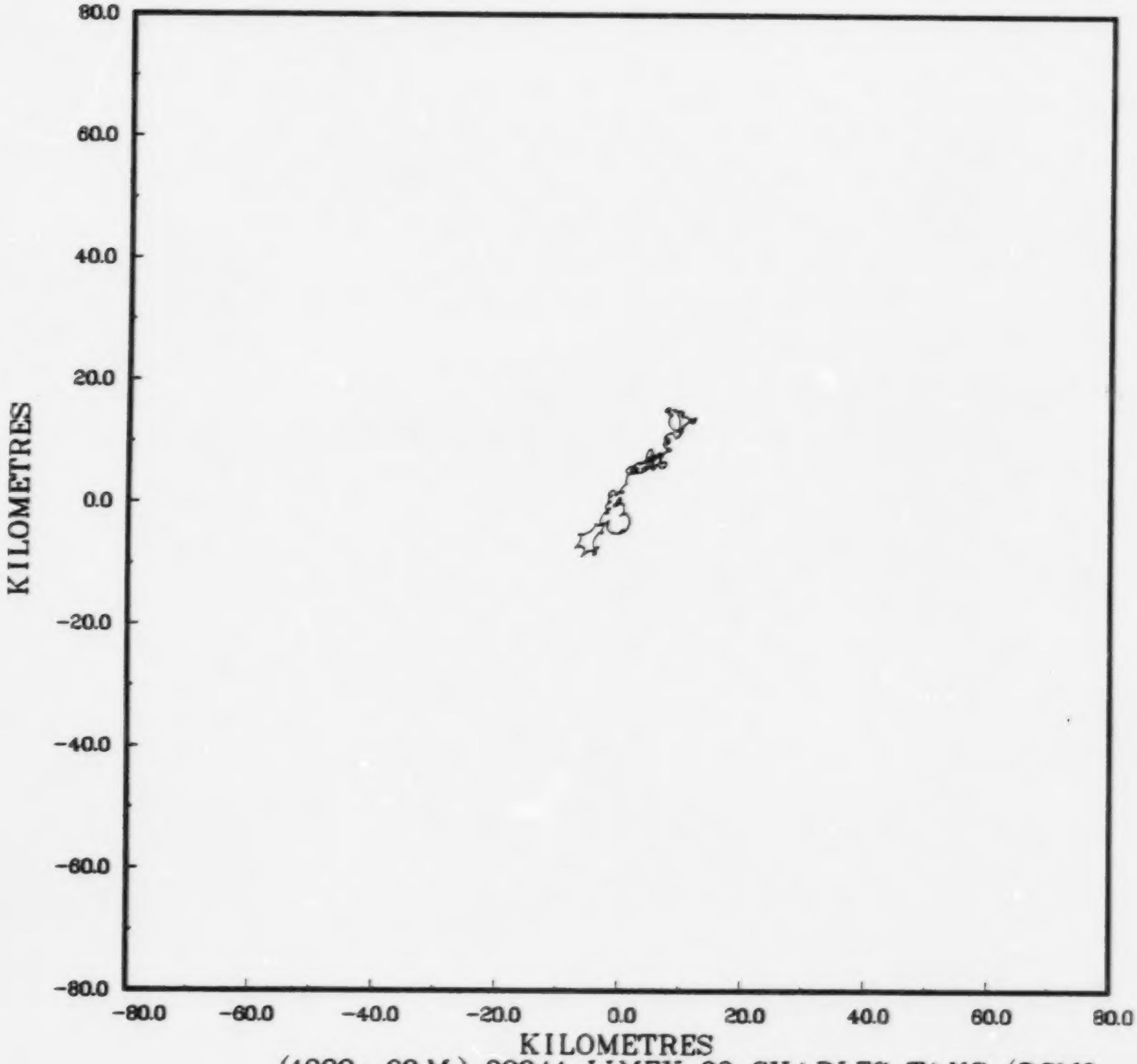
STN.1009, 30 M.



(1009.; 30.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 3392)

INST. 3392
90/11/21. 11.59.32.

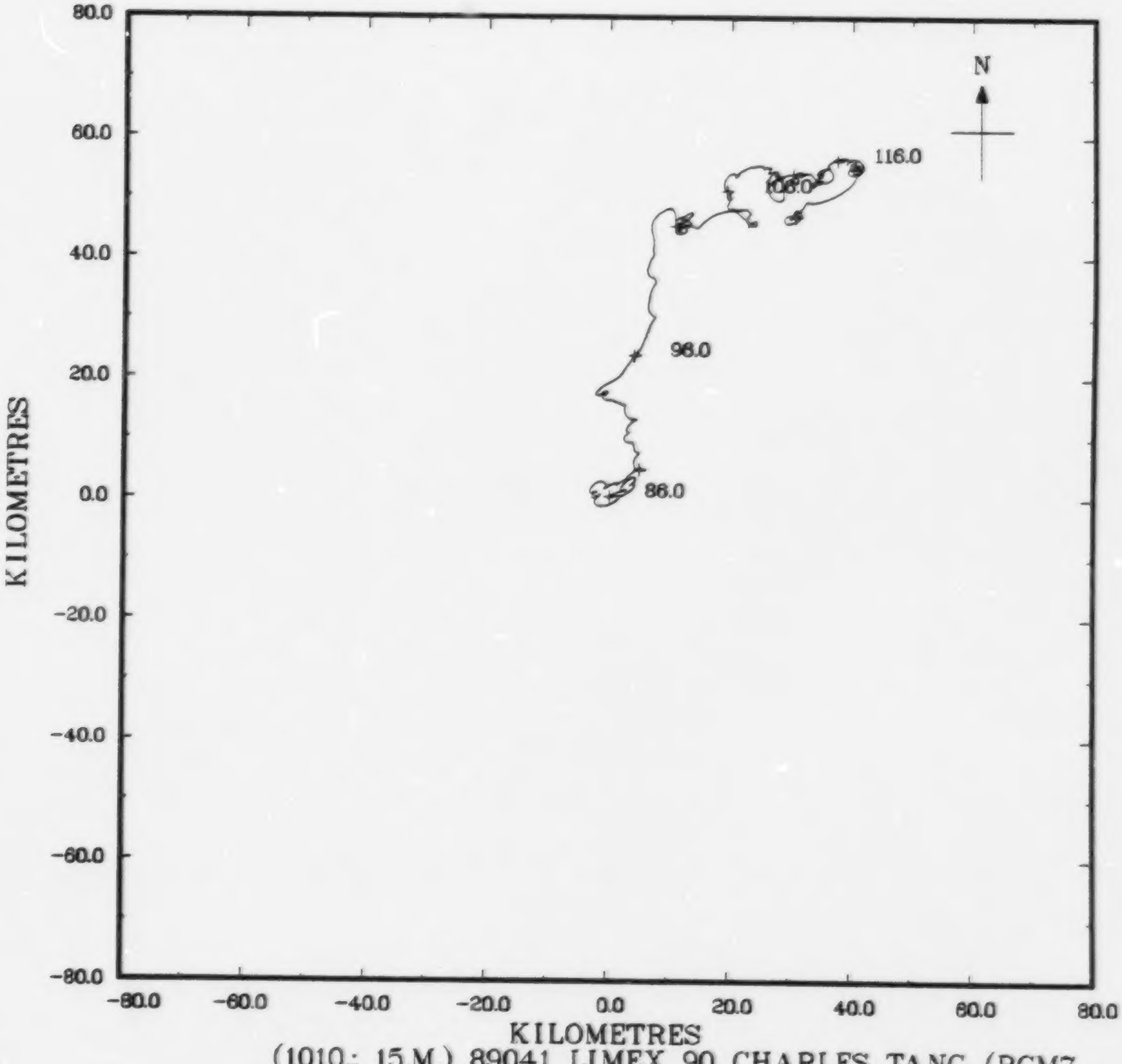
STN.1009, 60 M.



(1009.; 60.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 9328)

INST. 9328
90/11/21. 12.00.48.

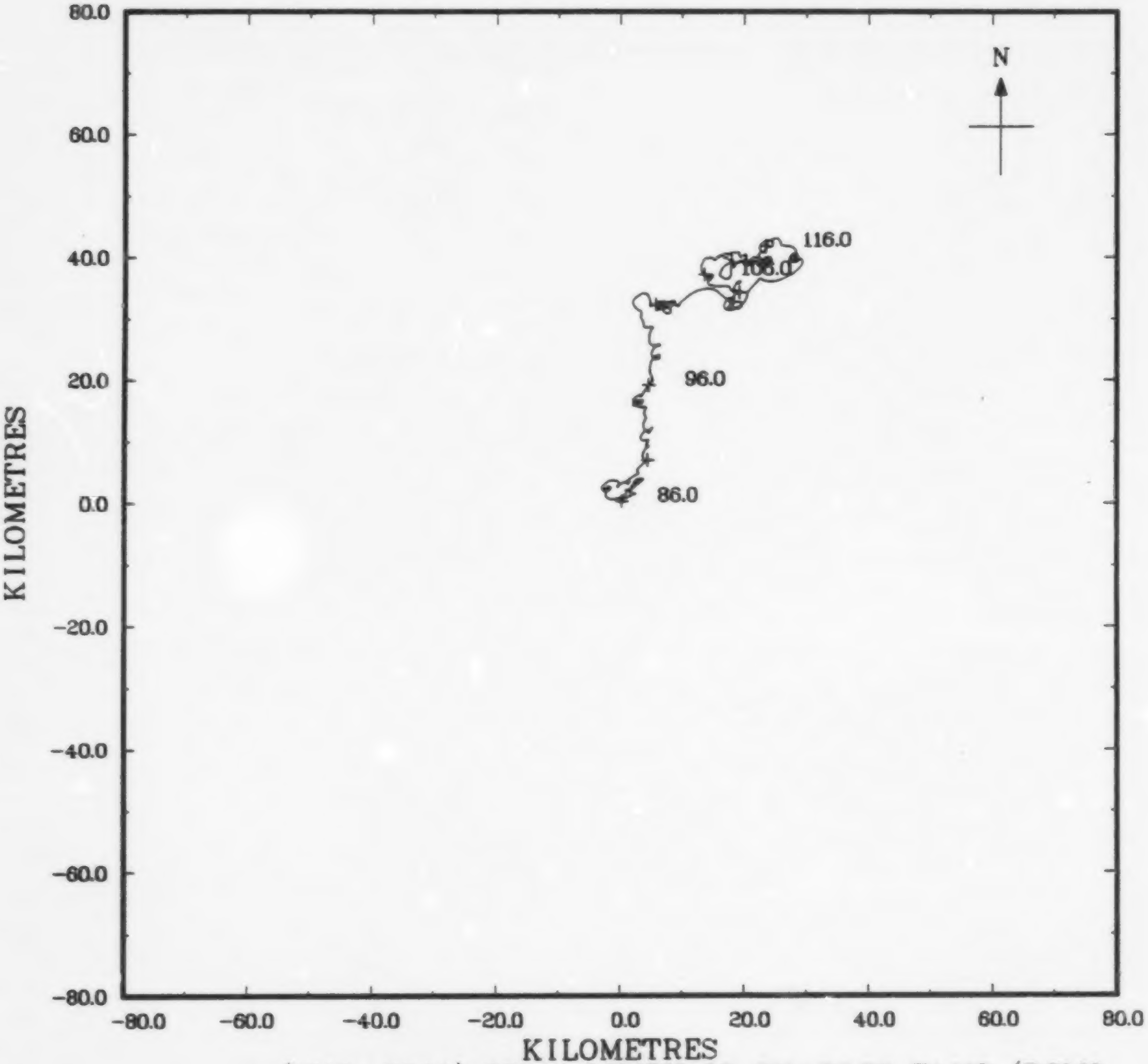
STN.1010, 15 M.



(1010.; 15.M.) 89041 LIMEX 90 CHARLES TANG (RCM7 9145)

INST. 9145
90/11/22 08:52:04.

STN.1010, 30 M.

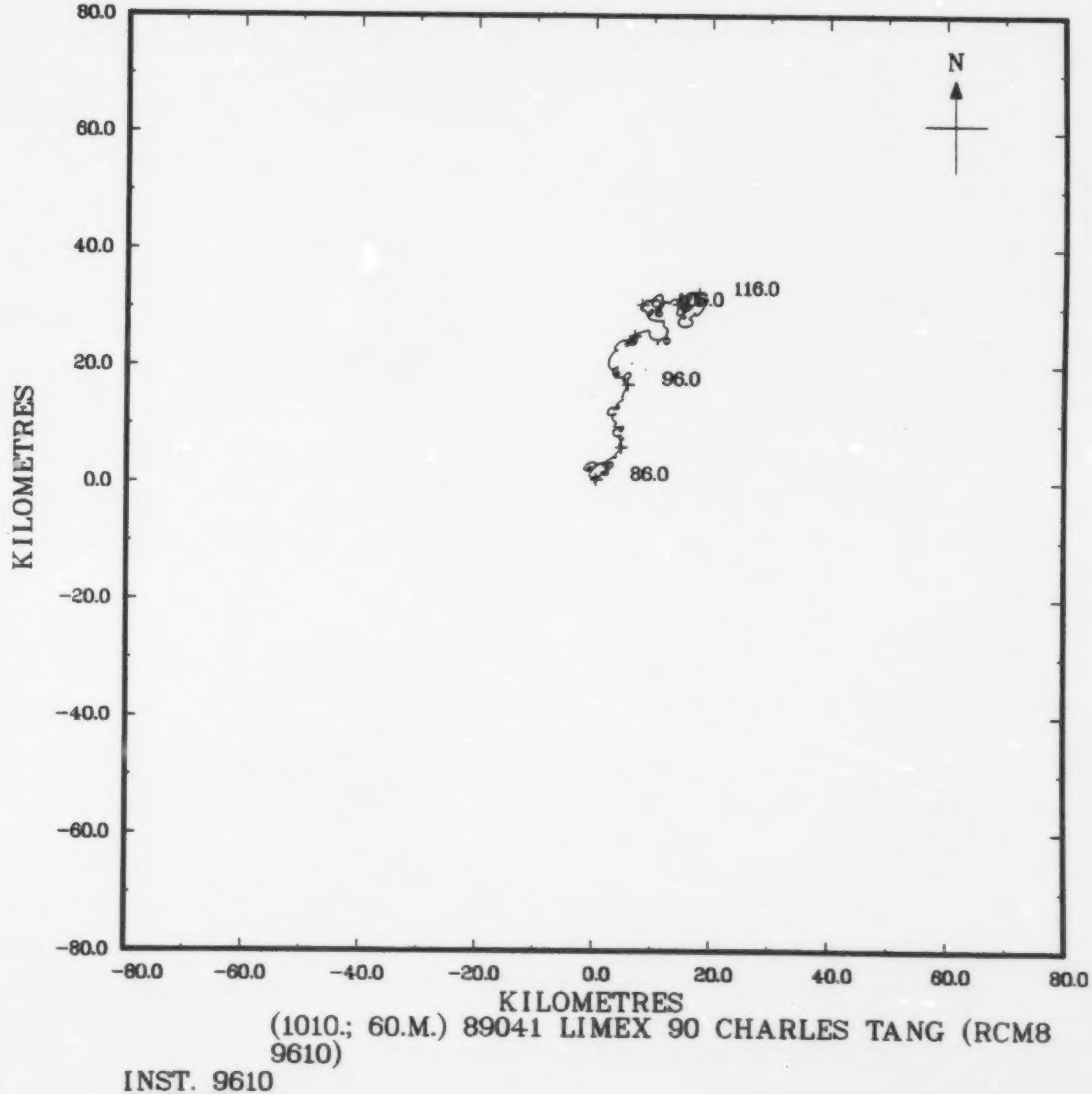


(1010.; 30.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 9607)

INST. 9607

90/11/22. 10.50.57.

STN.1010, 60 M.

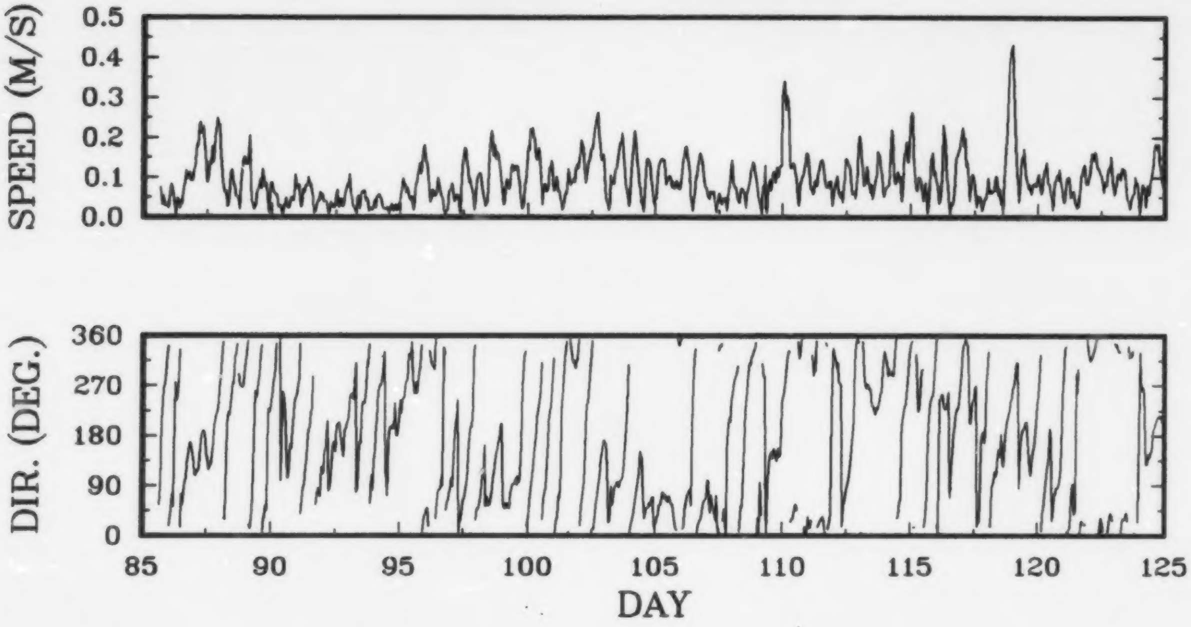


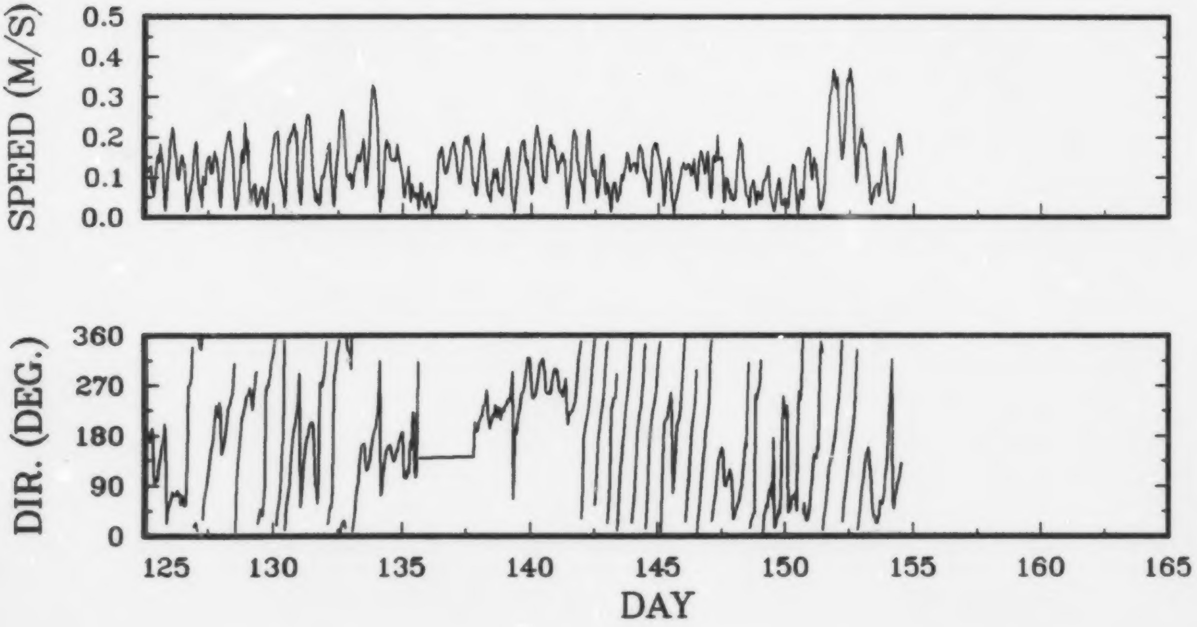
(1010.; 60.M.) 89041 LIMEX 90 CHARLES TANG (RCM8 9610)

INST. 9610

90/11/22. 10.58.07.

RDI 11.90 M


SPEED (M/S)
0.5
0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
270
180
90
0
85
90
95
100
105
110
115
120
125
DAY


SPEED (M/S)
0.5
0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
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270
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90
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125
130
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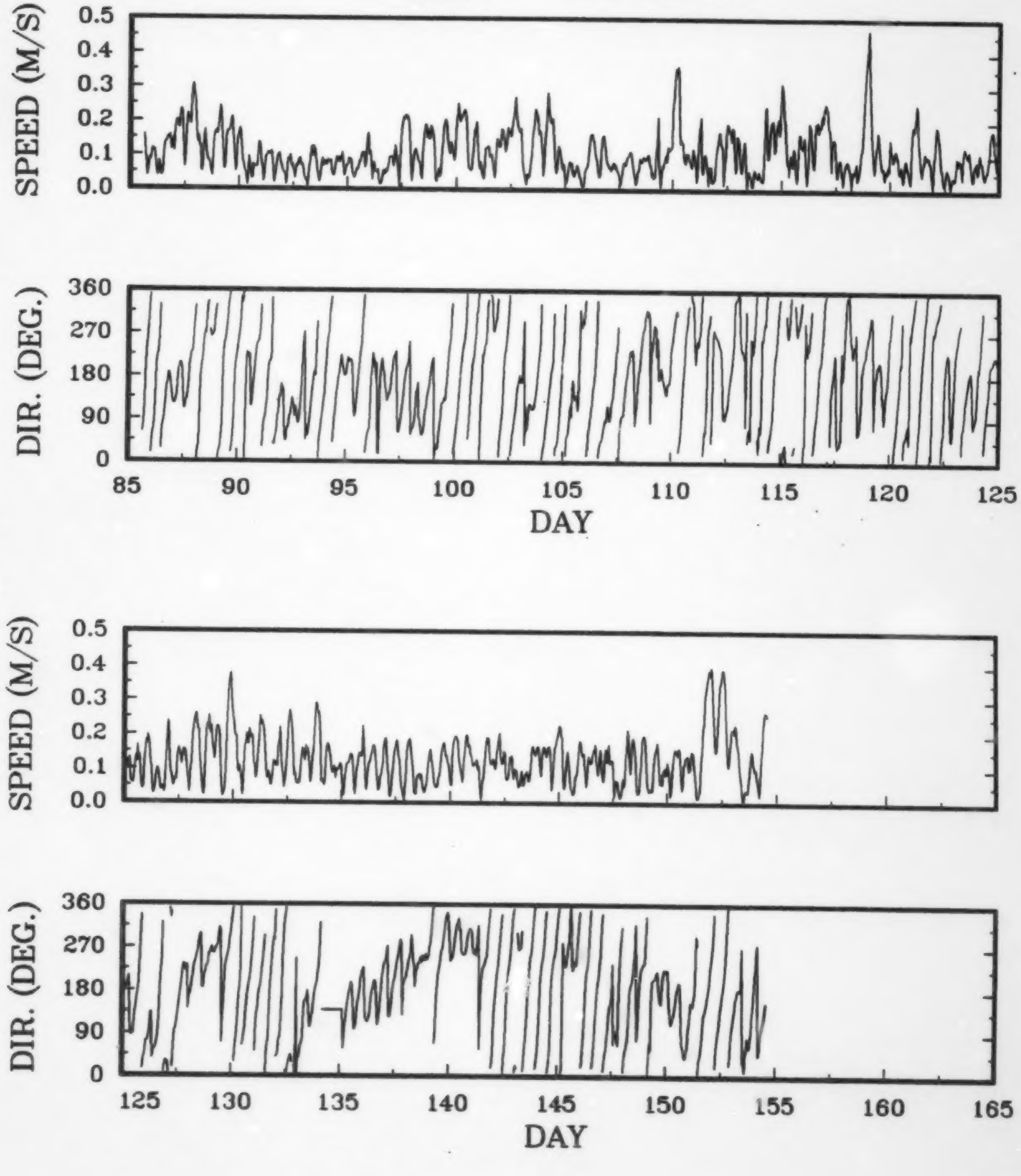
145
150
155
160
165
DAY

RDI 20.40 M


SPEED (M/S)
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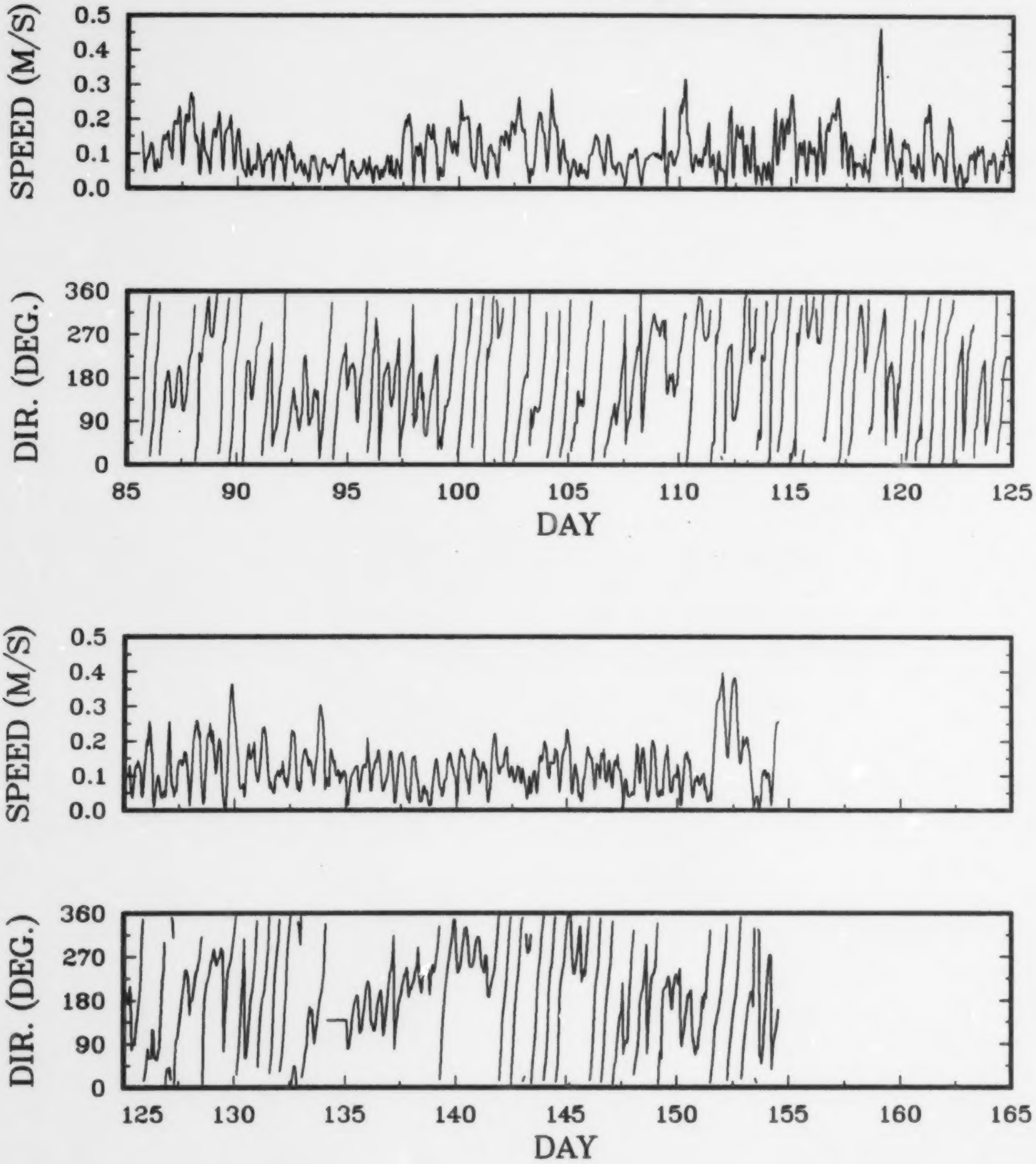
0.1
0.2
0.3
0.4
0.5
DIR. (DEG.)
0
90
180
270
360
85
90
95
100
105
110
115
120
125
DAY
SPEED (M/S)
0.0
0.1
0.2
0.3
0.4
0.5
DIR. (DEG.)
0
90
180
270
360
125
130
135
140
145
150
155
160
165
DAY

RDI 28.90 M


SPEED (M/S)
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0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
270
180
90
0
85
90
95
100
105
110
115
120
125
DAY
SPEED (M/S)
0.5
0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
270
180
90
0
125
130
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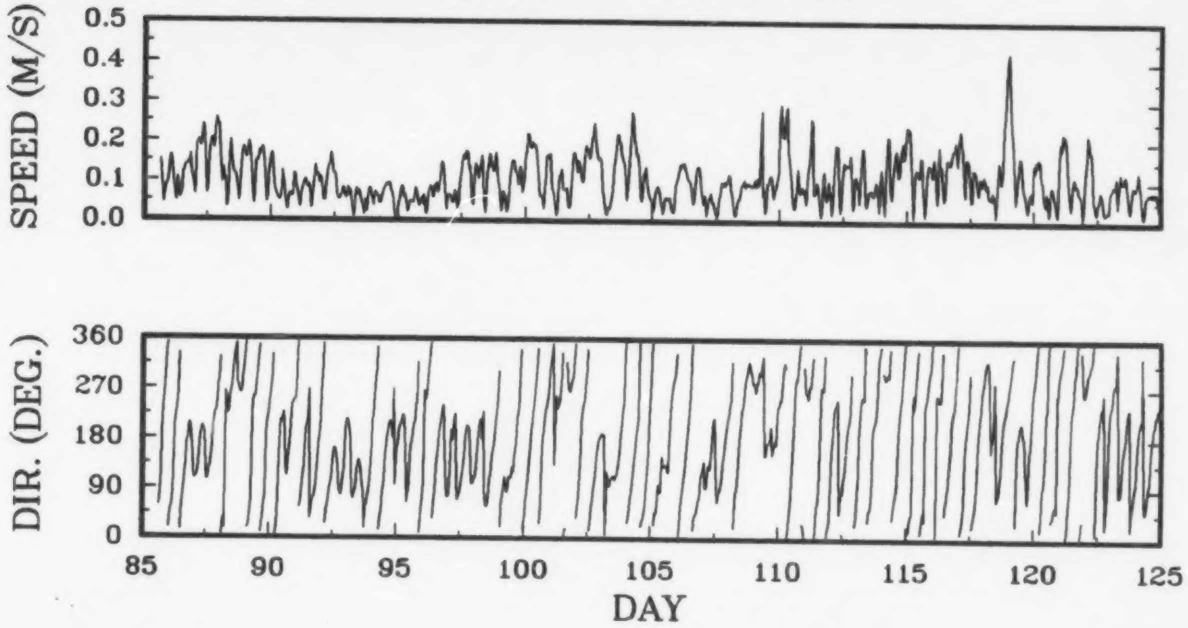
140
145
150
155
160
165
DAY

RDI 37.40 M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DIR. (DEG.)
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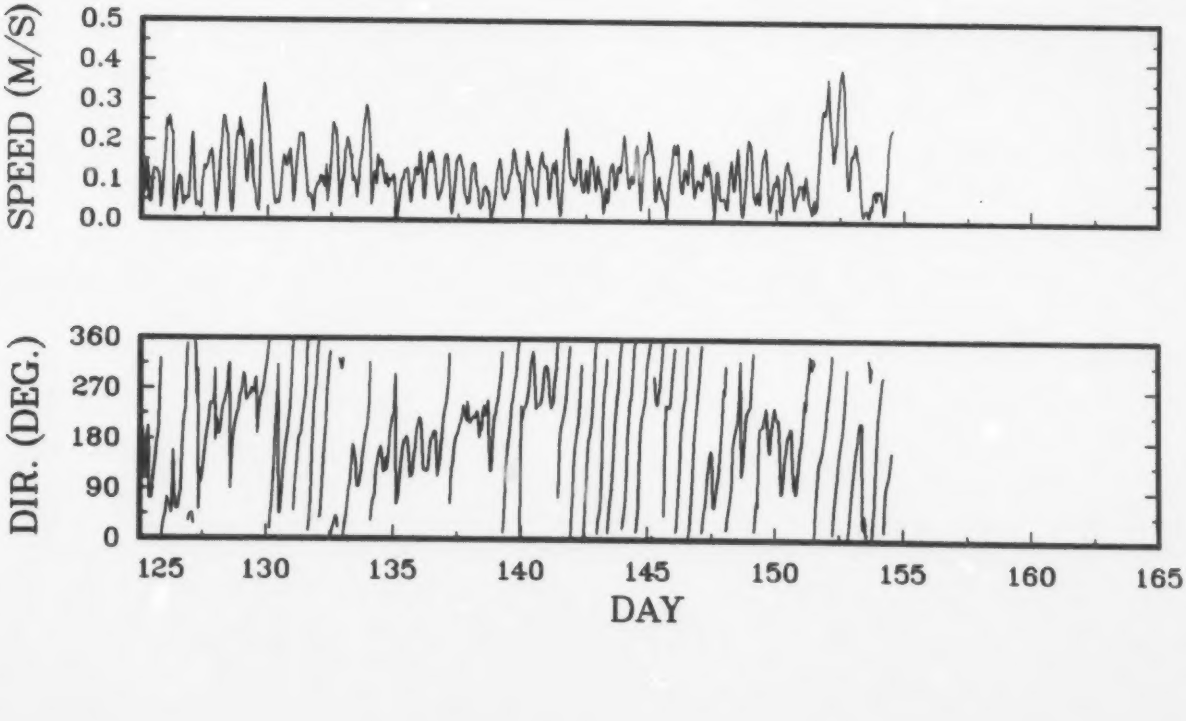
125
DAY


SPEED (M/S)
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0.2
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DIR. (DEG.)
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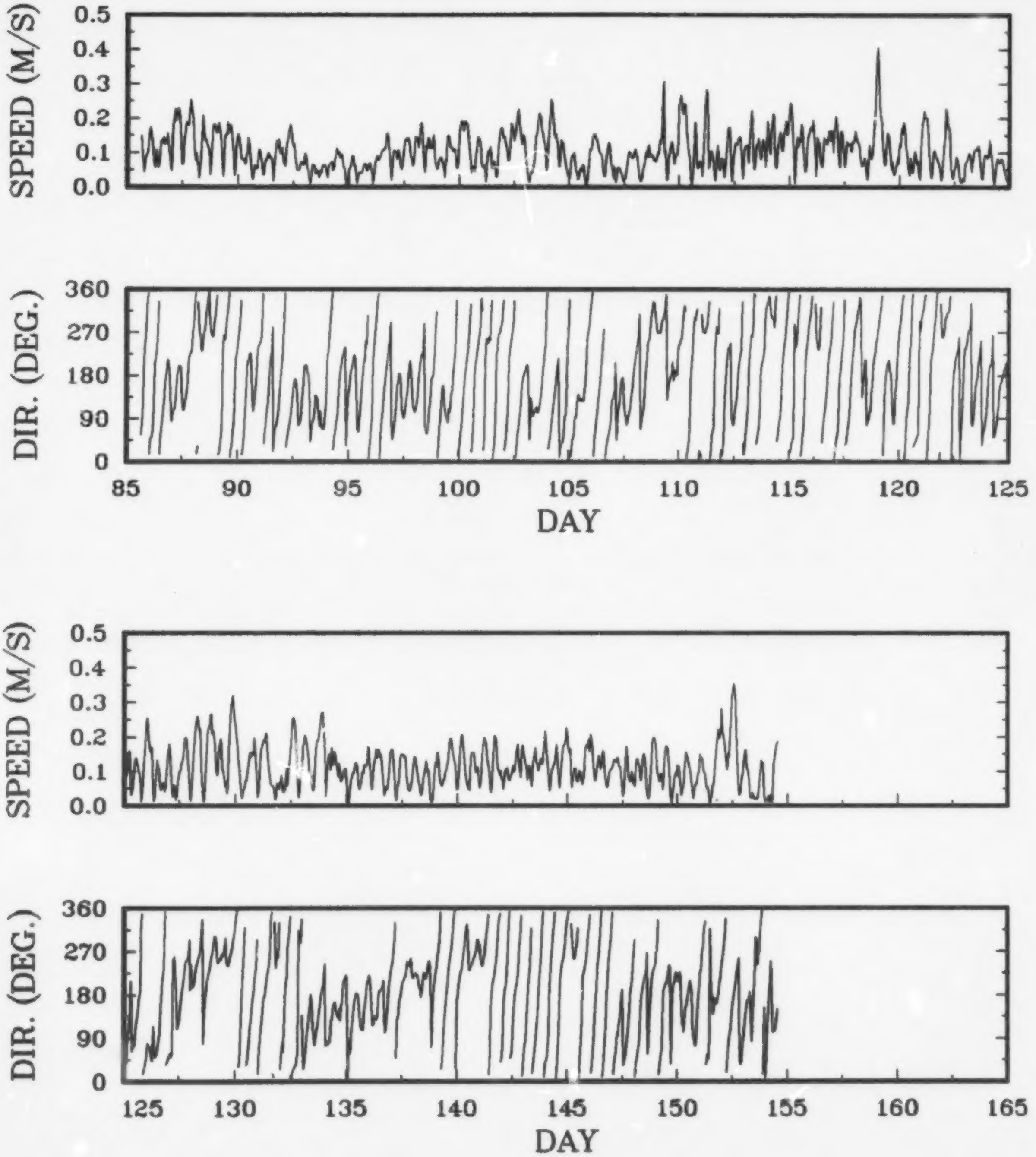
155
160
165
DAY



RDI 45.90 M

SPEED (M/S)
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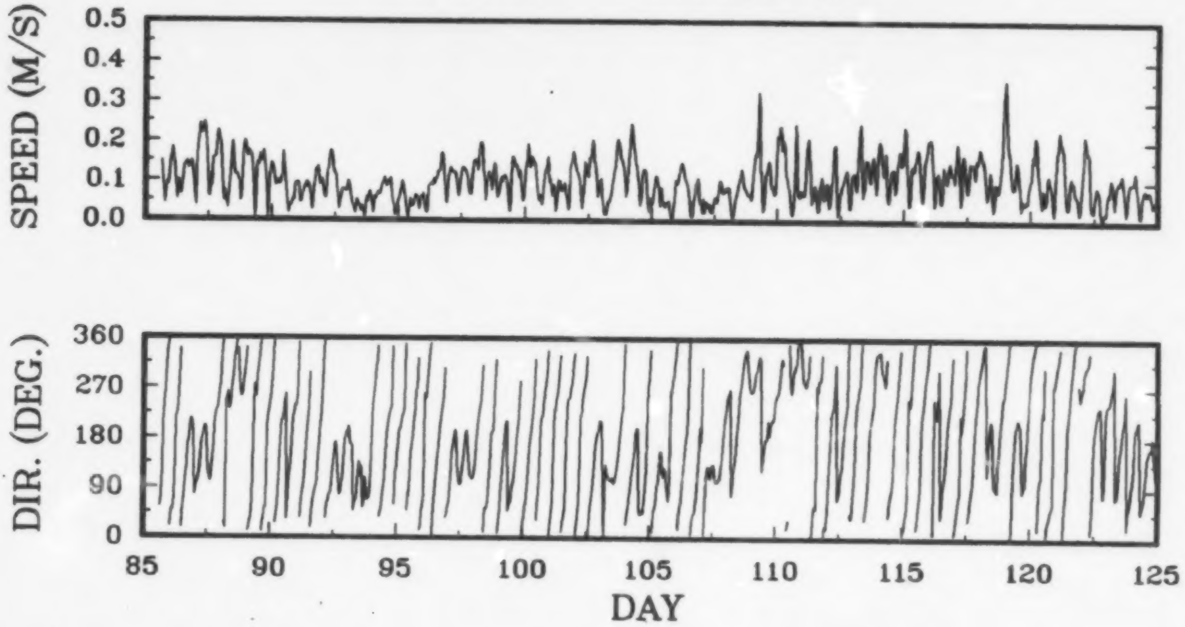
0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
270
180
90
0
85
90
95
100
105
110
115
120
125
DAY
SPEED (M/S)
0.5
0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
270
180
90
0
125
130
135
140
145
150
155
160
165
DAY

RDI 54.40 M


SPEED (M/S)
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0.2
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DIR. (DEG.)
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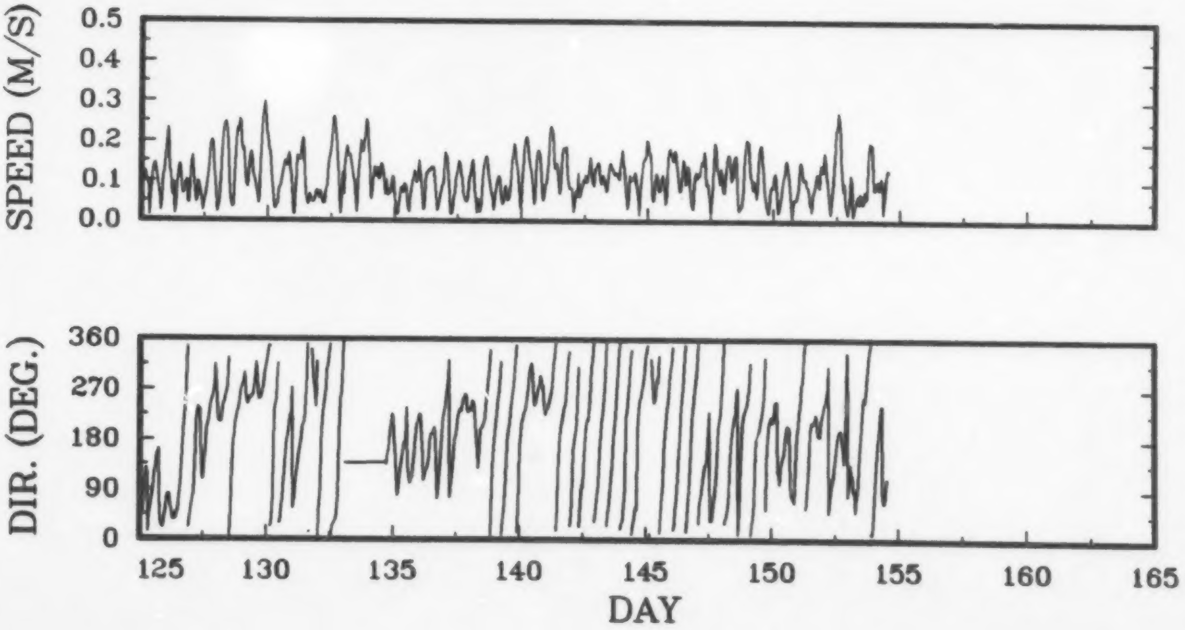
120
125
DAY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DIR. (DEG.)
360
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135
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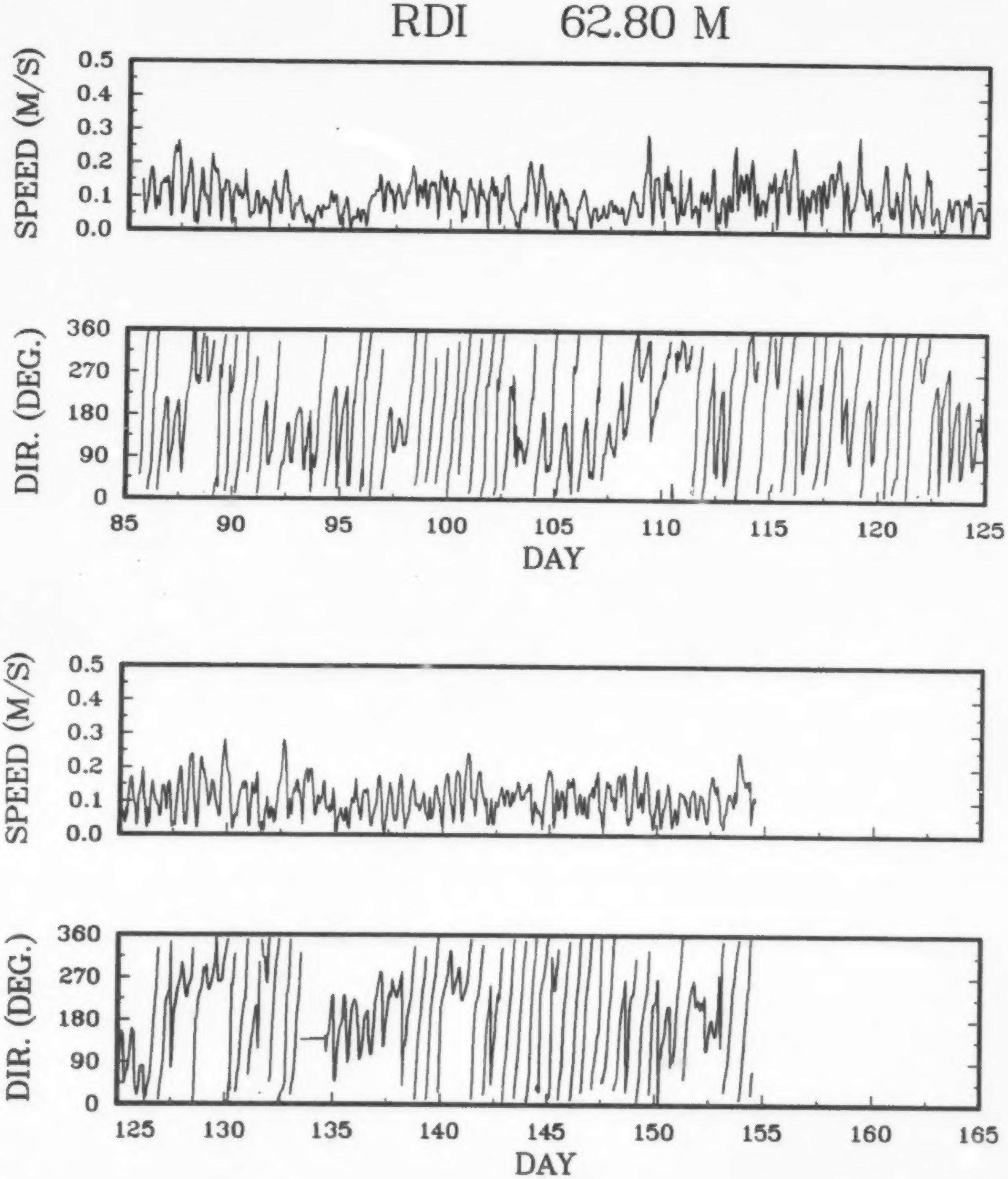
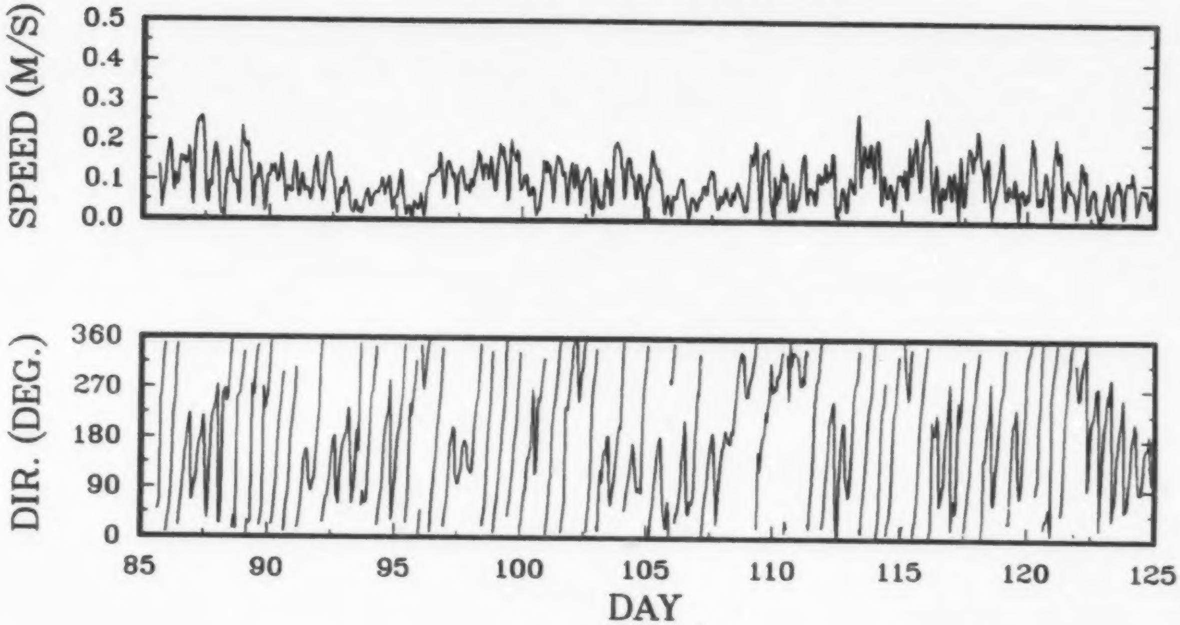
155
160
165
DAY


RDI 62.80 M

SPEED (M/S)
0.5
0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
270
180
90
0
85
90
95
100
105
110
115
120
125
DAY
SPEED (M/S)
0.5
0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
270
180
90
0
125
130
135
140
145
150
155
160
165
DAY

RDI 71.30 M


SPEED (M/S)
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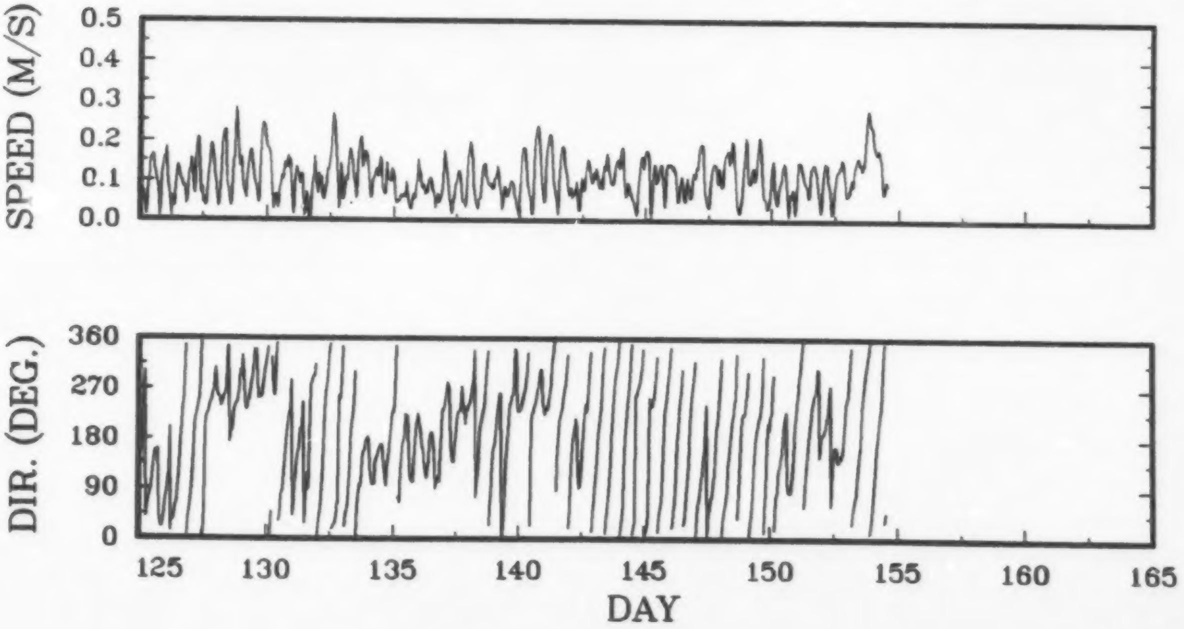
DAY


SPEED (M/S)
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DIR. (DEG.)
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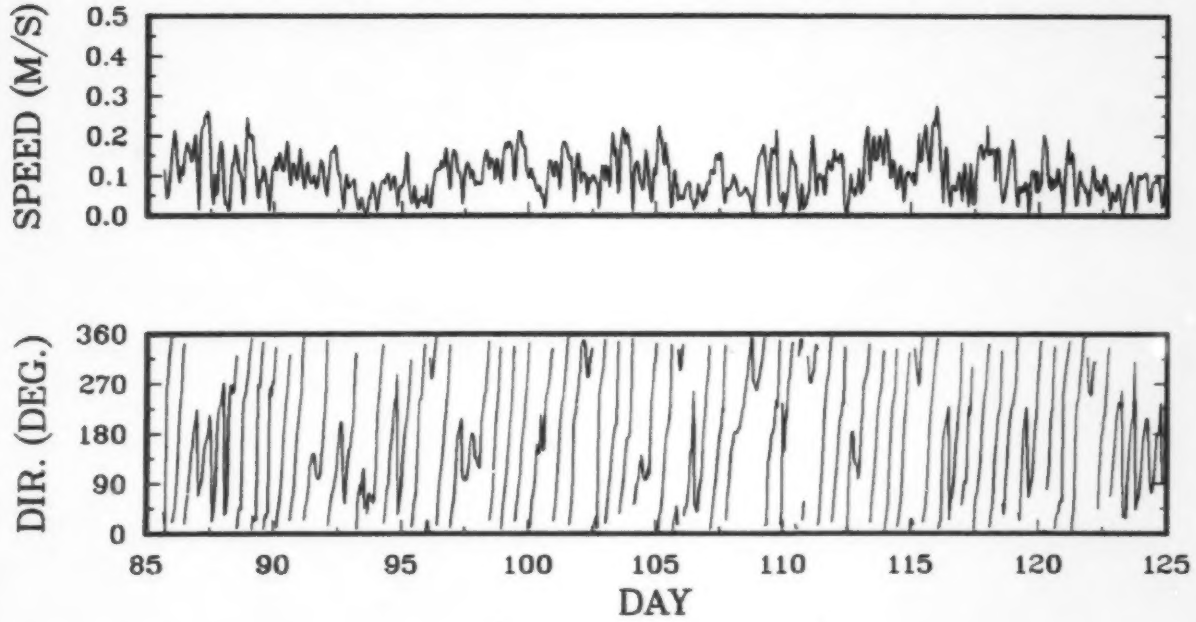
150
155
160
165
DAY

RDI 79.80 M


SPEED (M/S)
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DIR. (DEG.)
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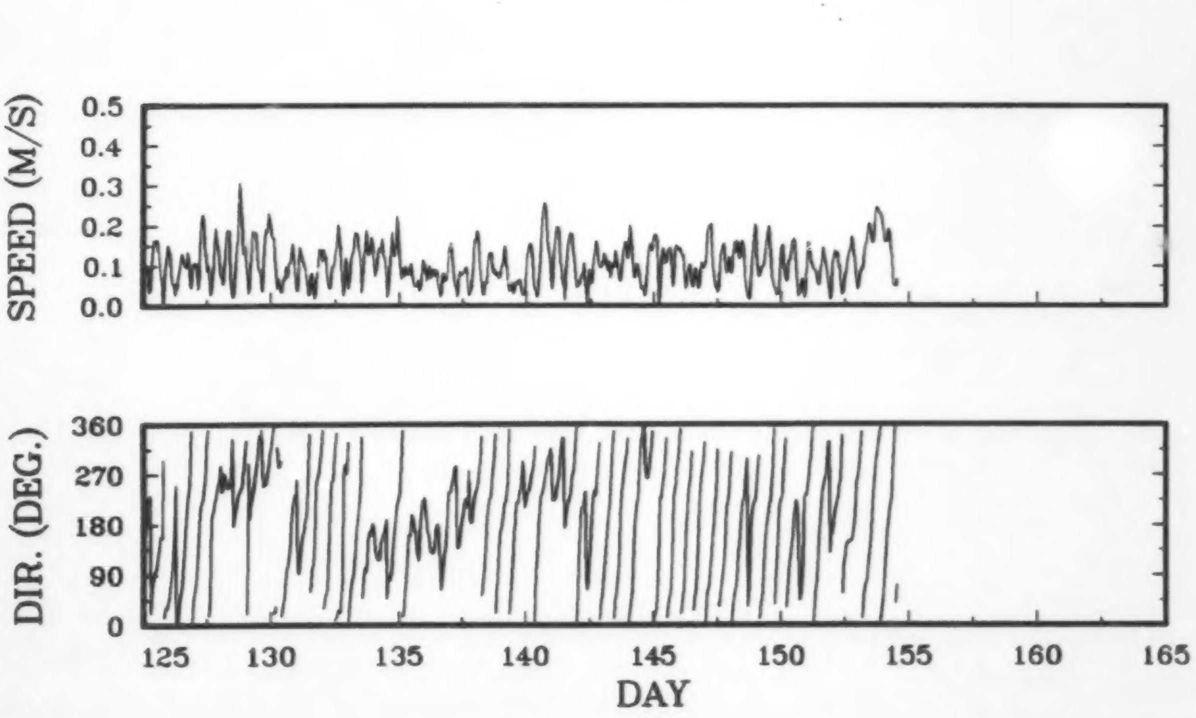
120
125
DAY


SPEED (M/S)
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0.1
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DIR. (DEG.)
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130
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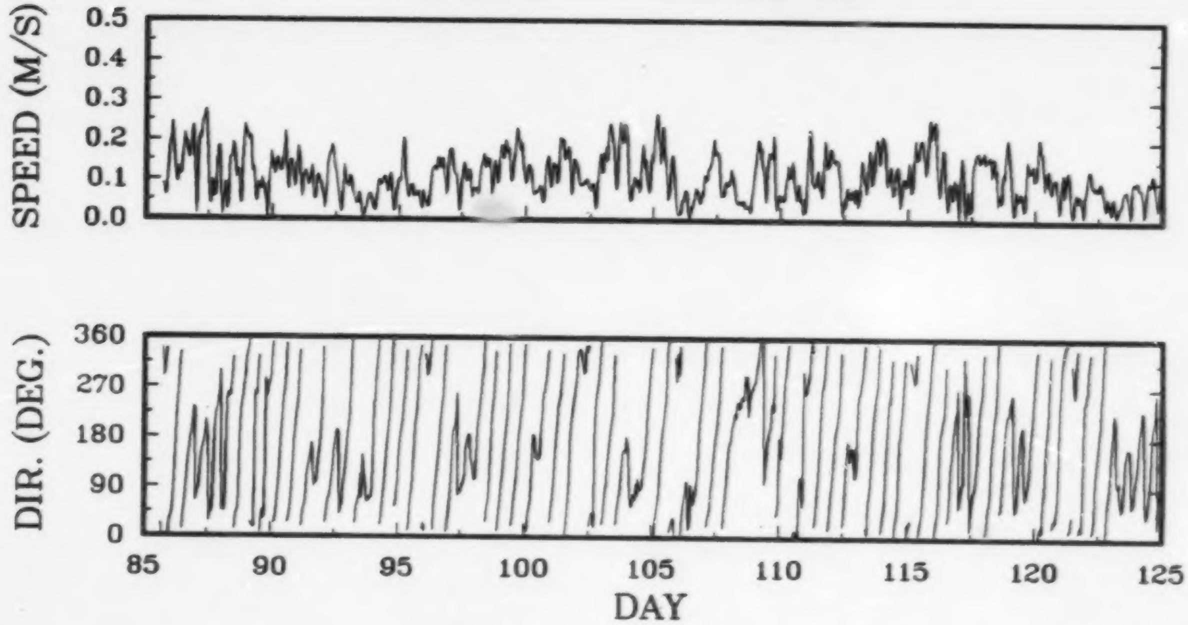
150
155
160
165
DAY

RDI 88.30 M


SPEED (M/S)
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DIR. (DEG.)
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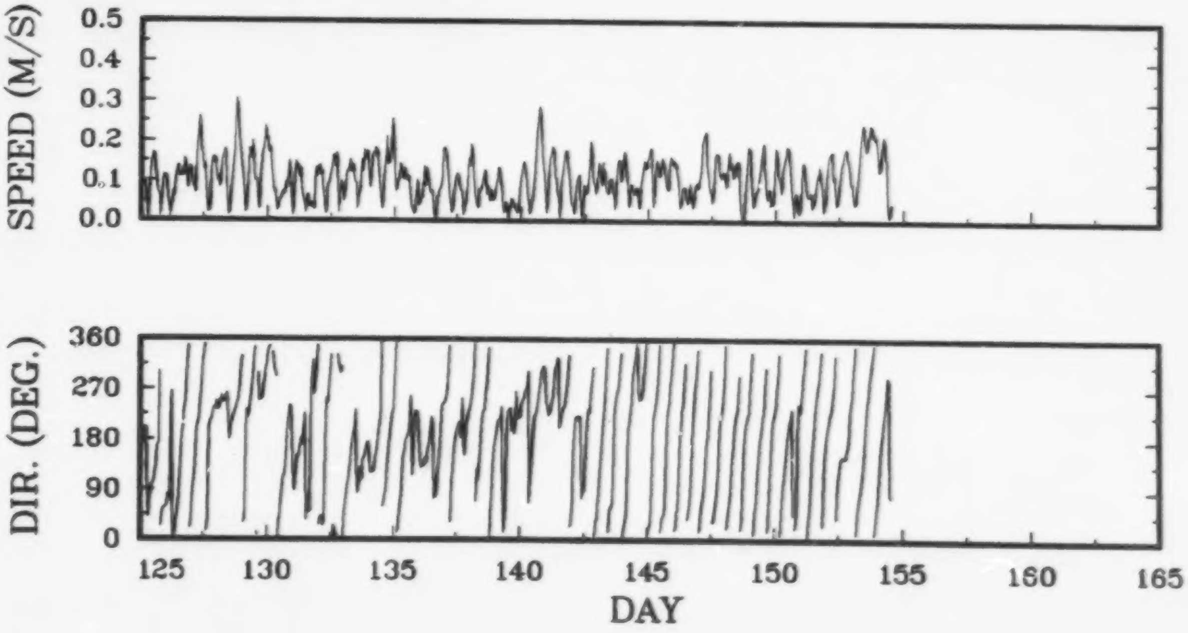
DAY


SPEED (M/S)
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0.1
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DIR. (DEG.)
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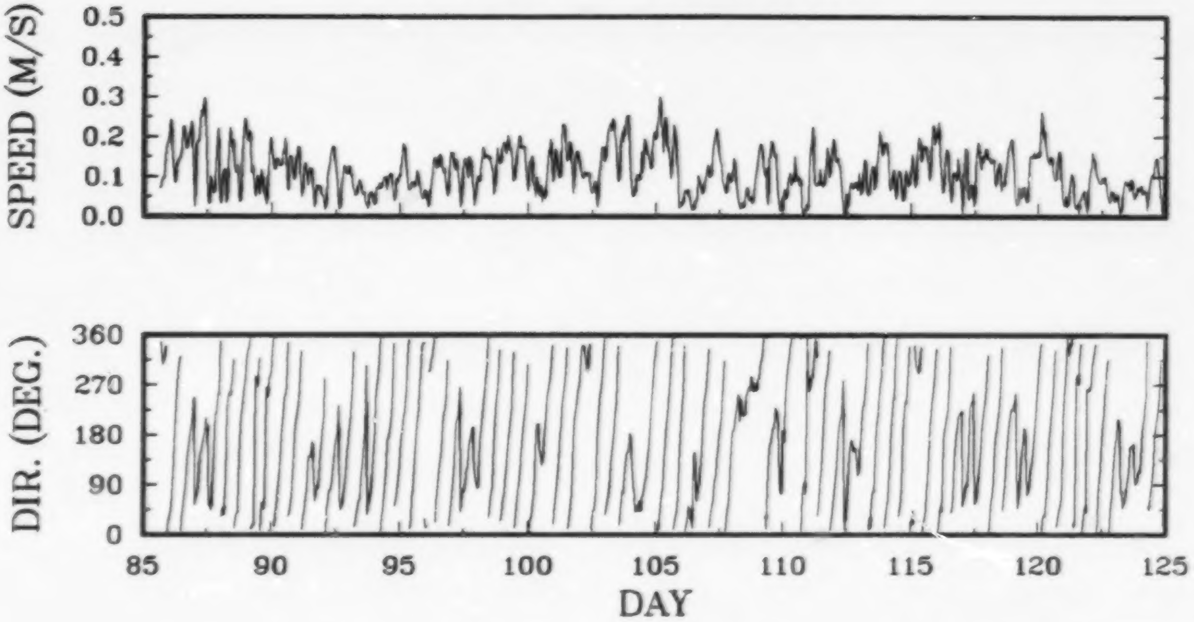
90
0
125
130
135
140
145
150
155
160
165
DAY

RDI 96.80 M


SPEED (M/S)
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DIR. (DEG.)
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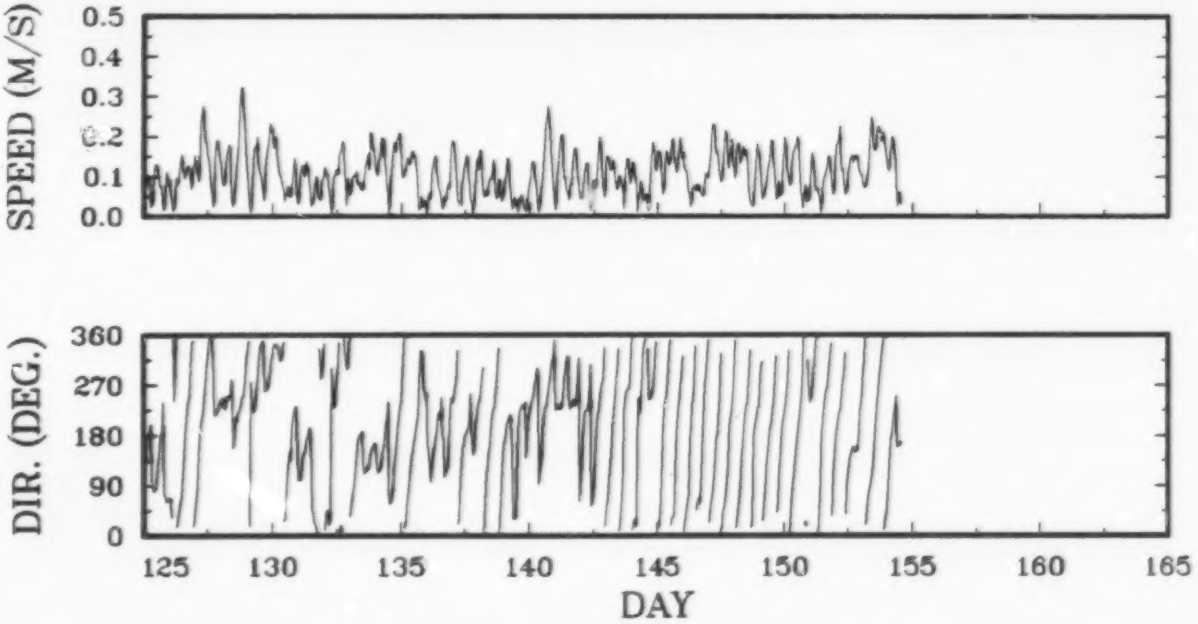
DAY


SPEED (M/S)
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0.3
0.2
0.1
0.0
DIR. (DEG.)
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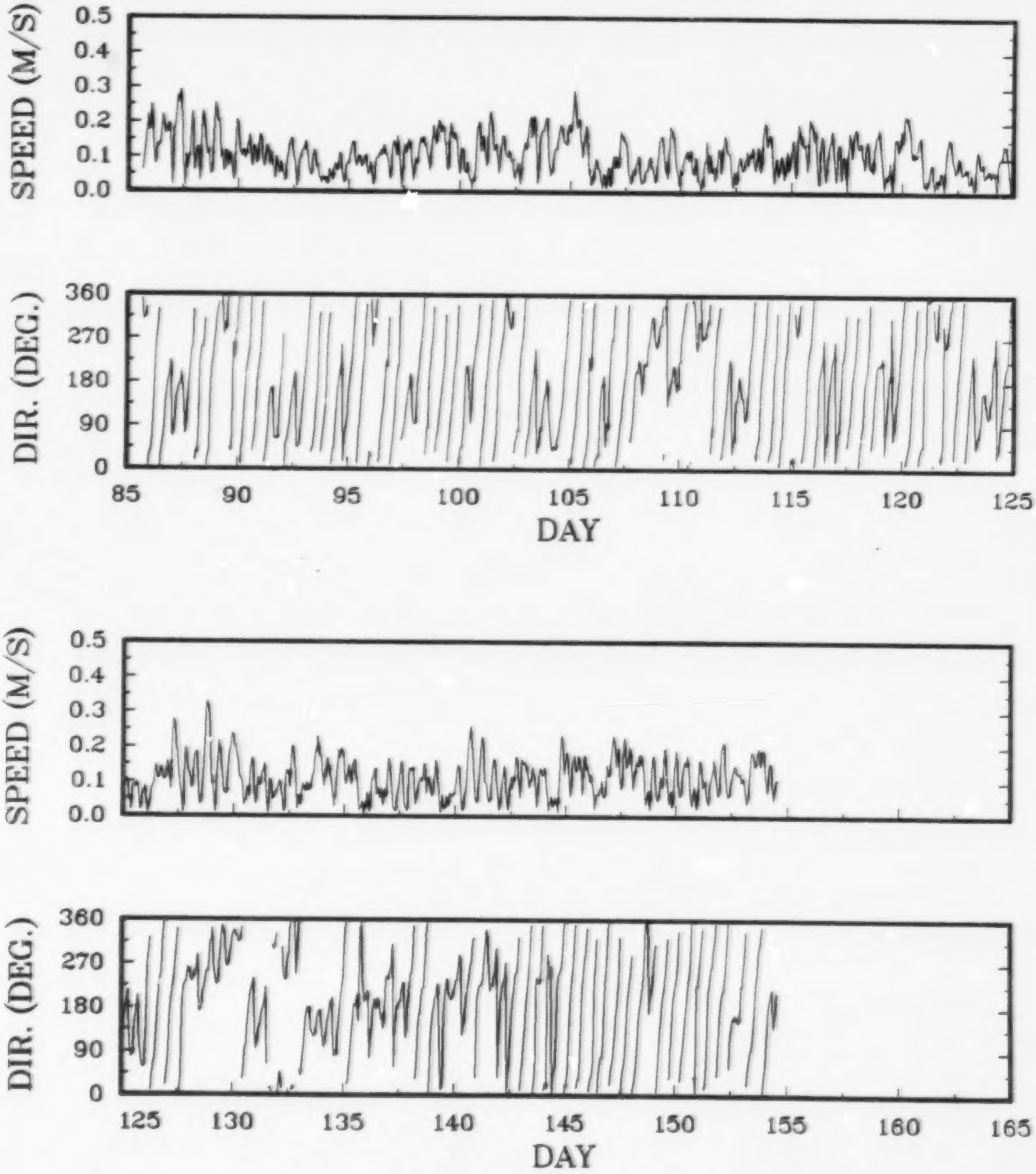
180
90
0
125
130
135
140
145
150
155
160
165
DAY

RDI 105.30 M


SPEED (M/S)
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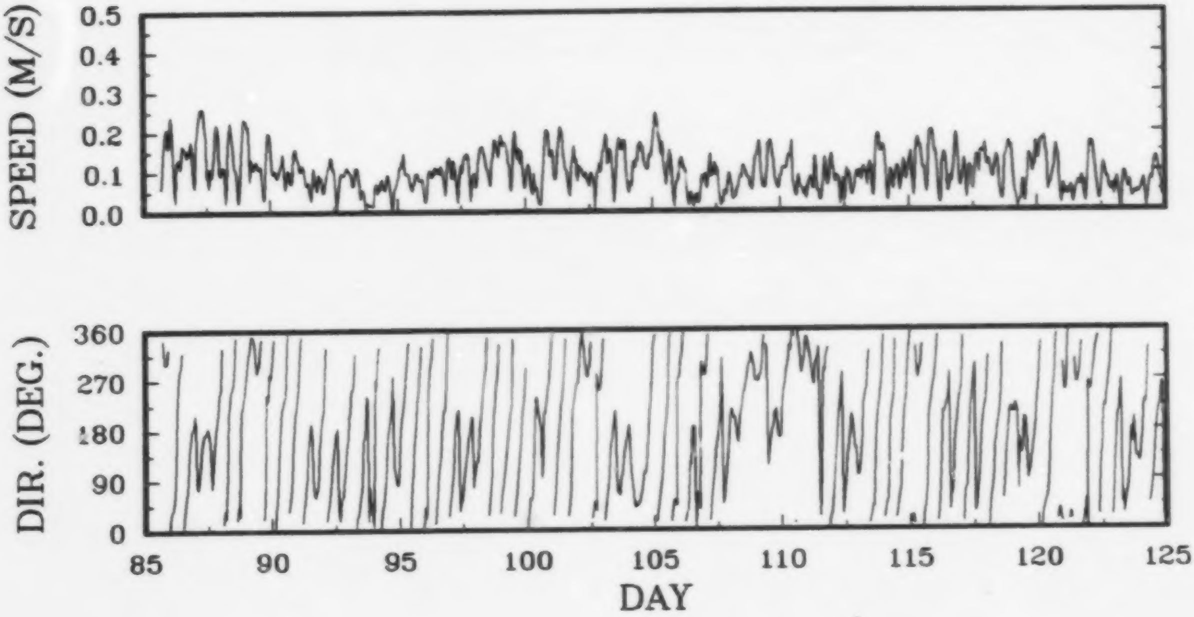
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
270
180
90
0
85
90
95
100
105
110
115
120
125
DAY
SPEED (M/S)
0.5
0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
270
180
90
0
125
130
135
140
145
150
155
160
165
DAY

RDI 113.80 M


SPEED (M/S)
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DIR. (DEG.)
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100
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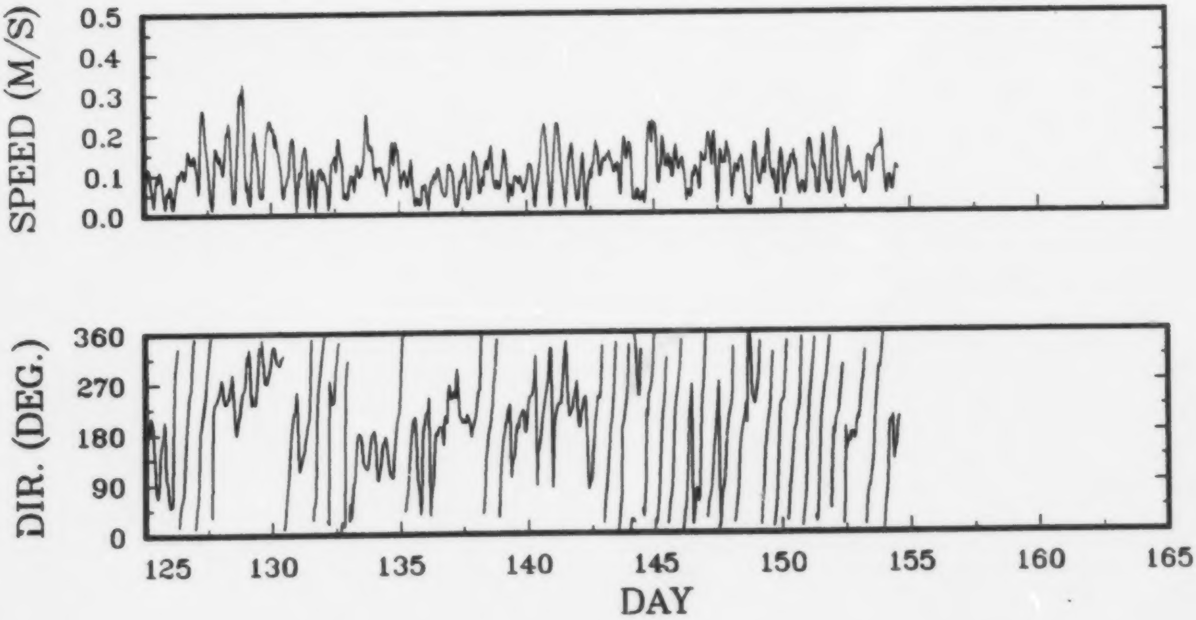
DAY


SPEED (M/S)
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0.2
0.1
0.0
DIR. (DEG.)
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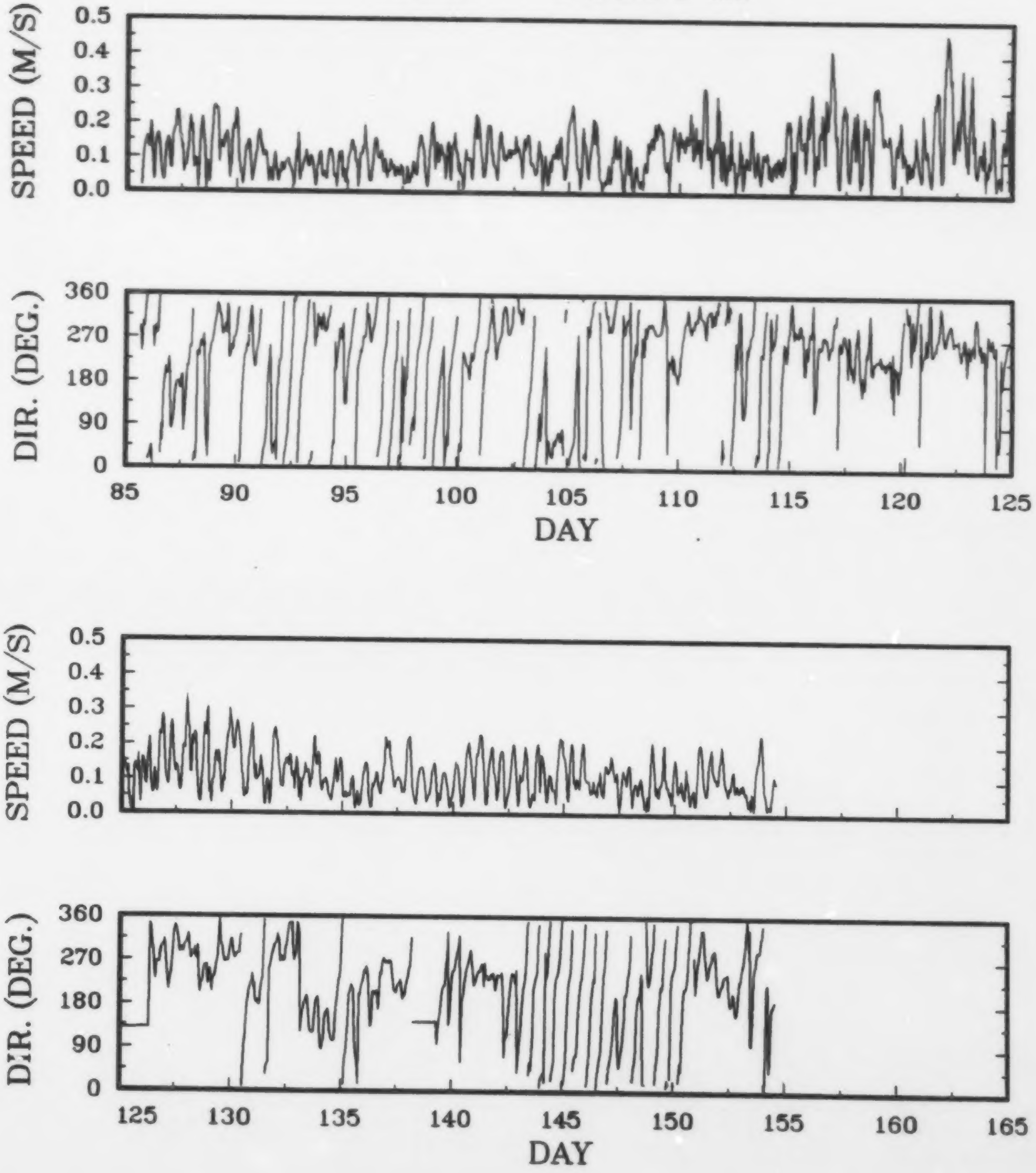
DAY



RDI 122.30 M

SPEED (M/S)
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DIR. (DEG.)
360
270
180
90
0
85
90
95
100
105
110
115
120
125
DAY
SPEED (M/S)
0.5
0.4
0.3
0.2
0.1
0.0
DIR. (DEG.)
360
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180
90
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130
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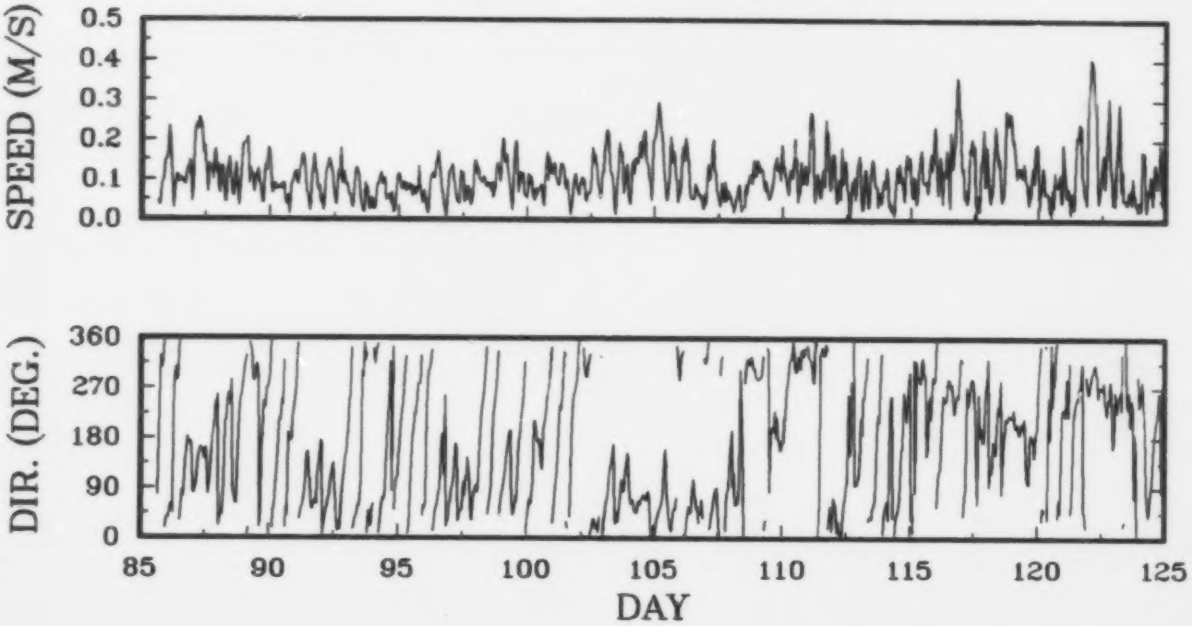
145
150
155
160
165
DAY

RDI 122.30 M


SPEED (M/S)
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DIR. (DEG.)
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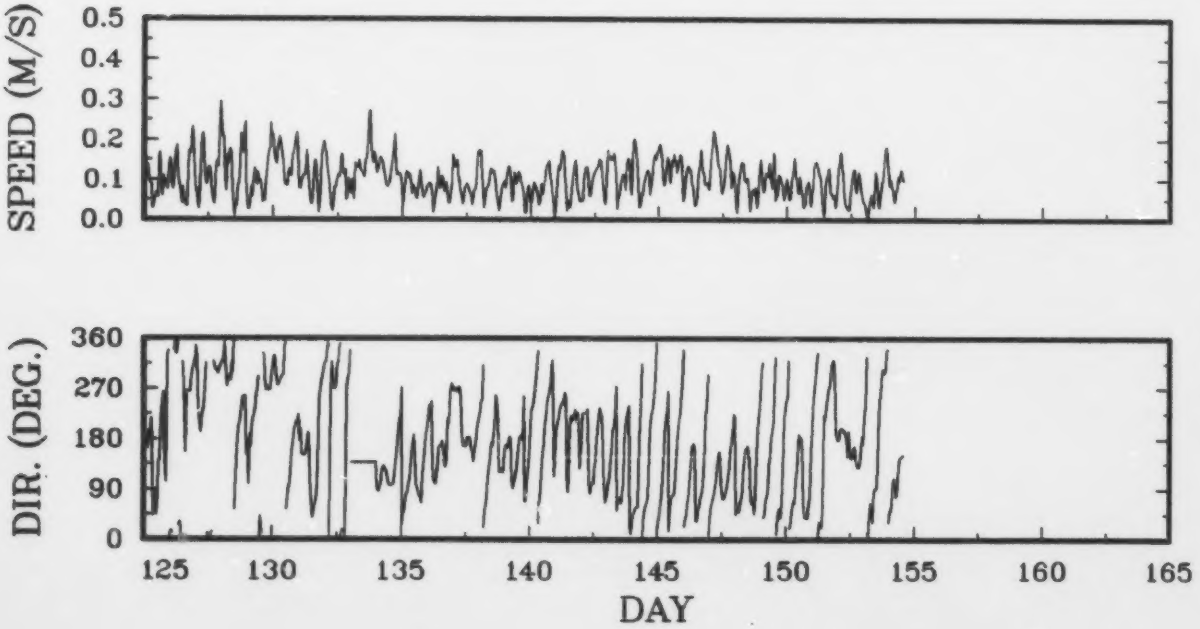
DAY


SPEED (M/S)
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DIR. (DEG.)
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125
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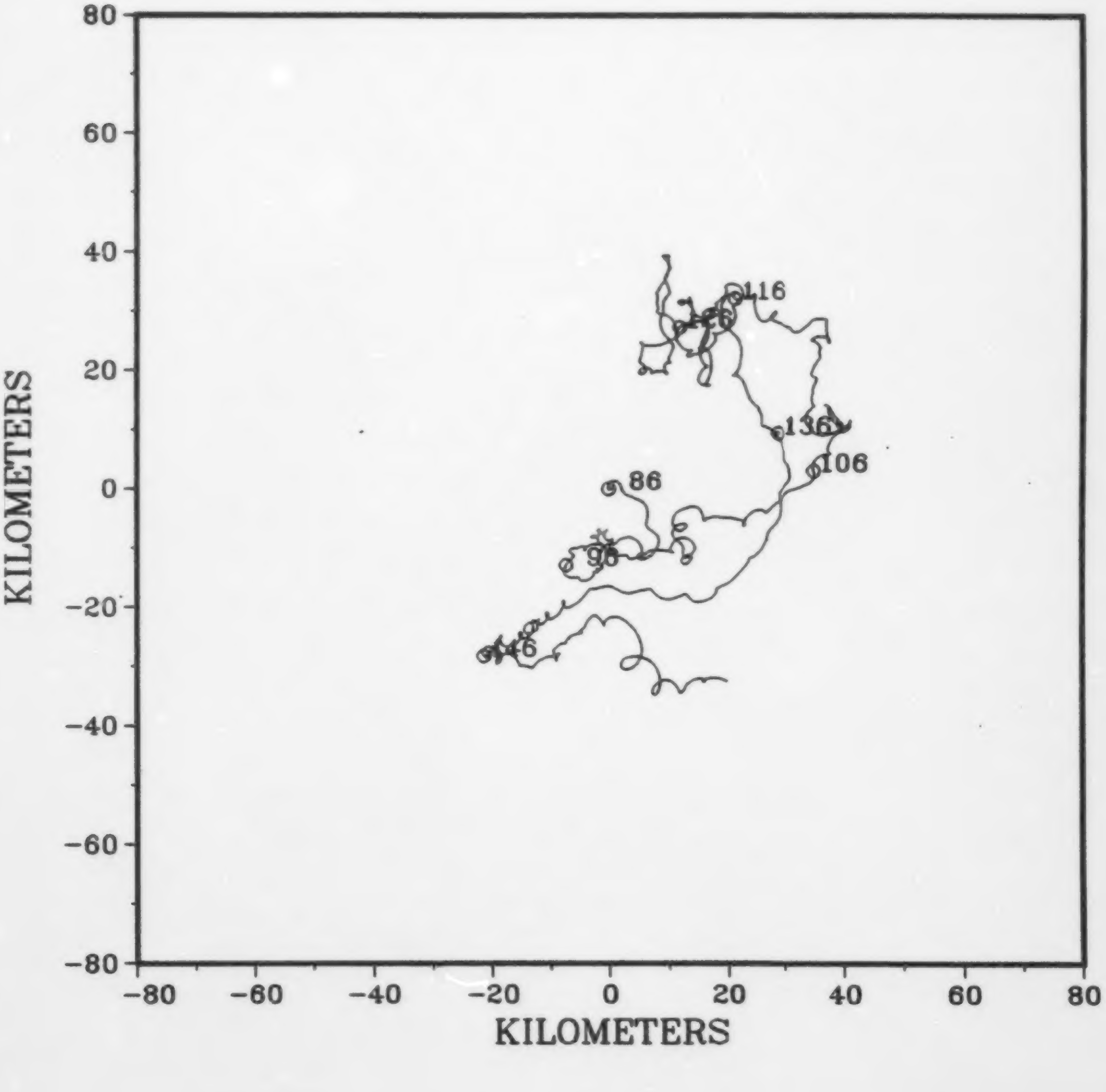
150
155
160
165
DAY

RDI 11.90 M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80
KILOMETERS
116
126
136
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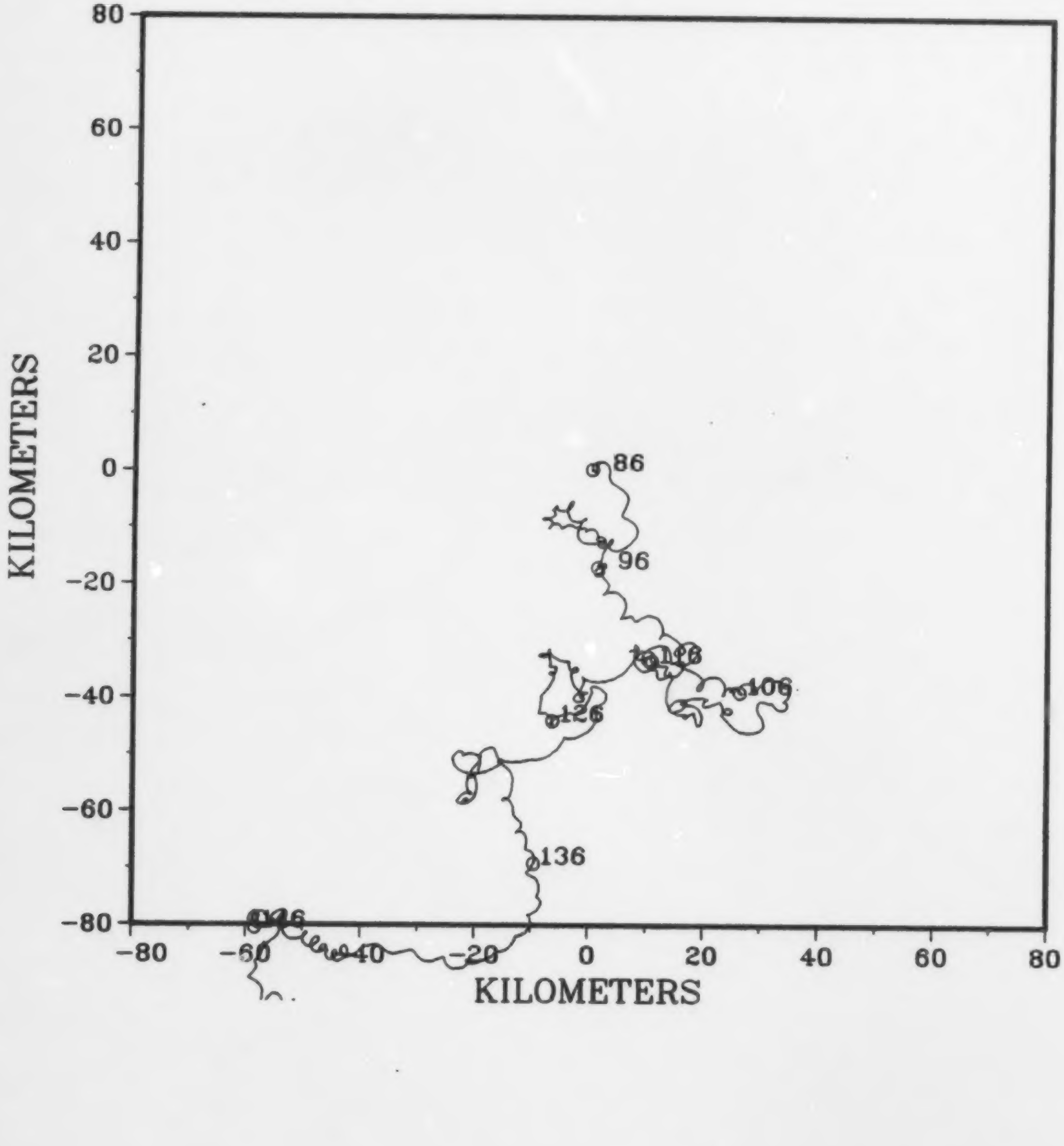
86
96
146

RDI 20.40 M



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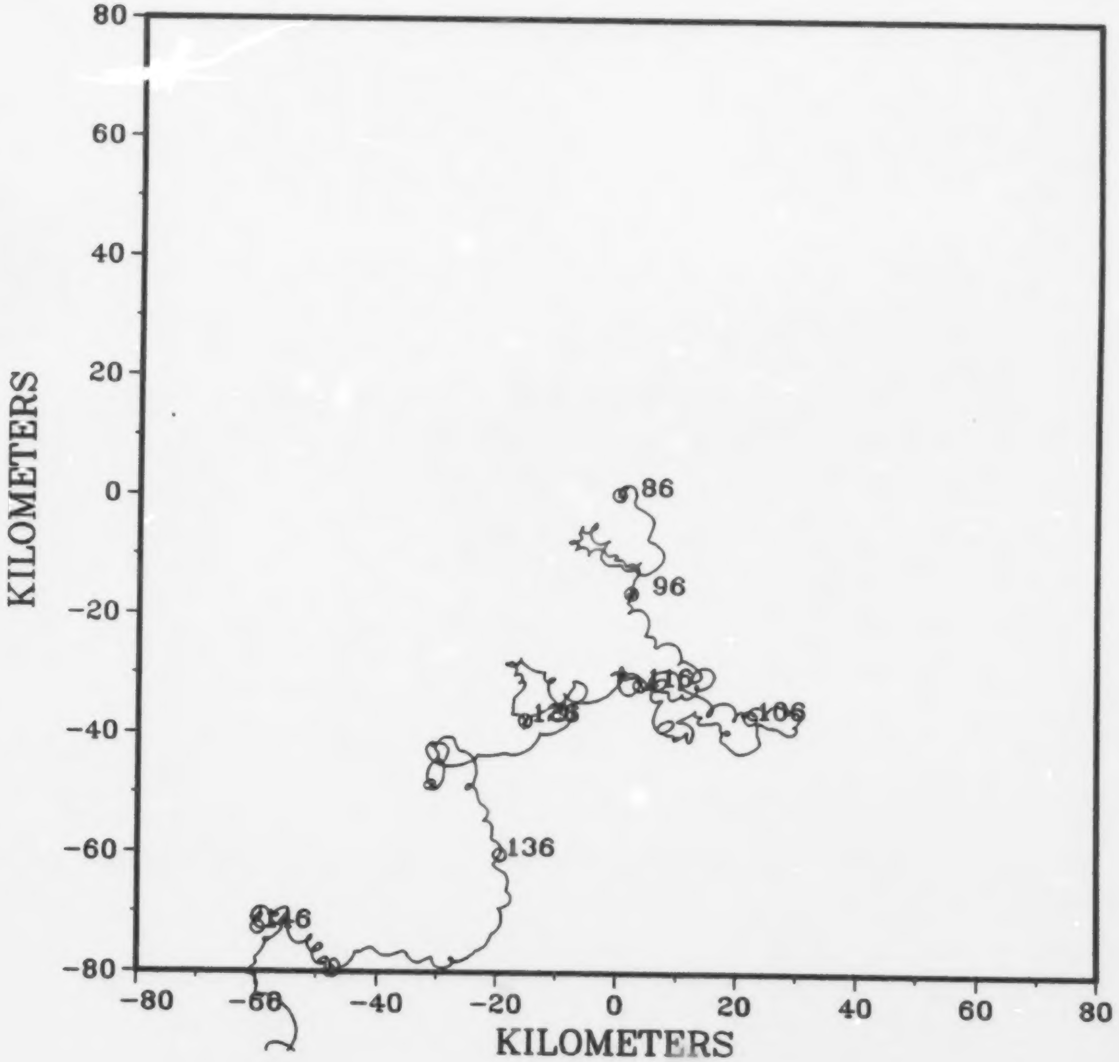
RDI 28.90 M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KILOMETERS
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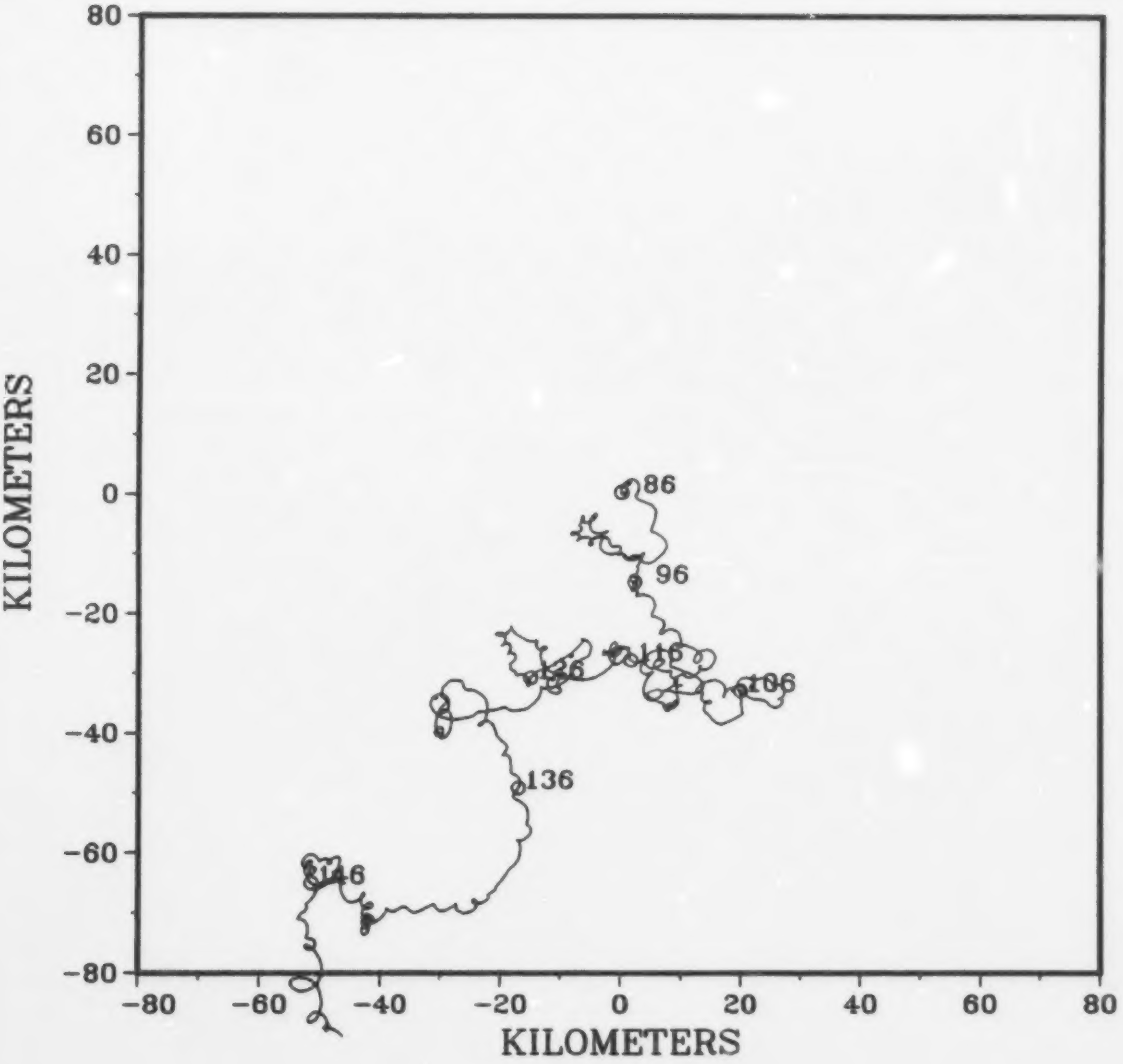
RDI 37.40 M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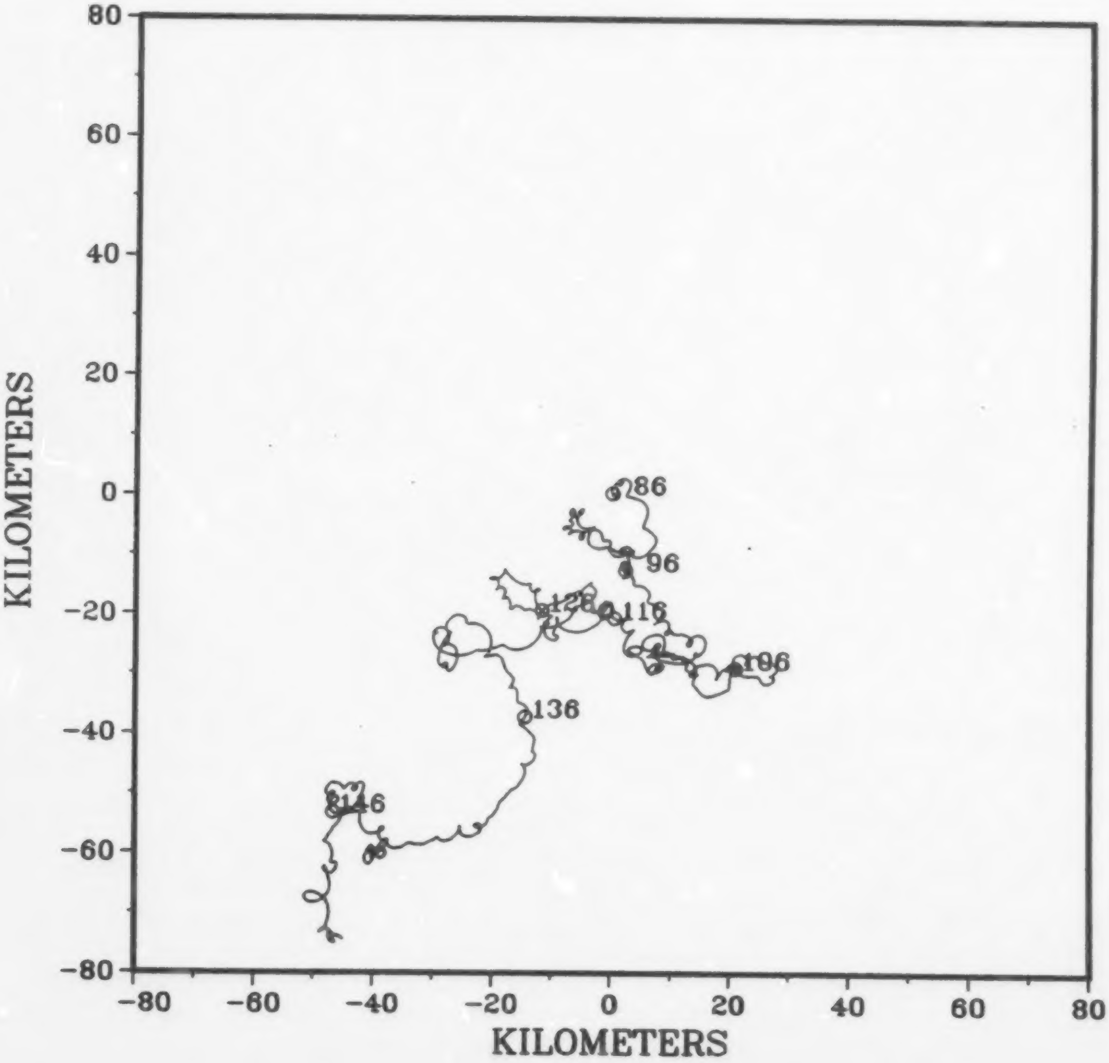

RDI 45.90 M

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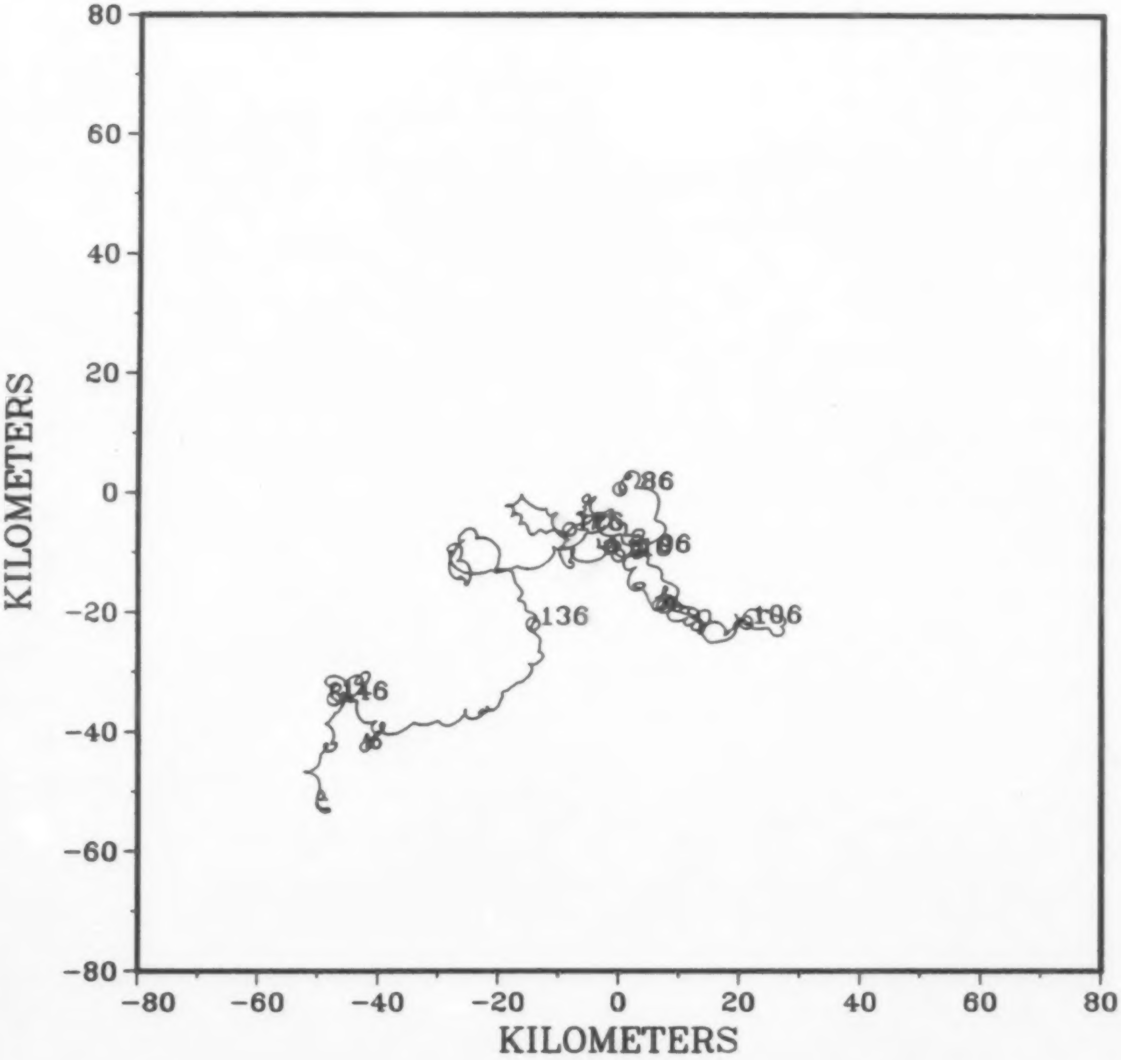
RDI 54.40 M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KILOMETERS
86
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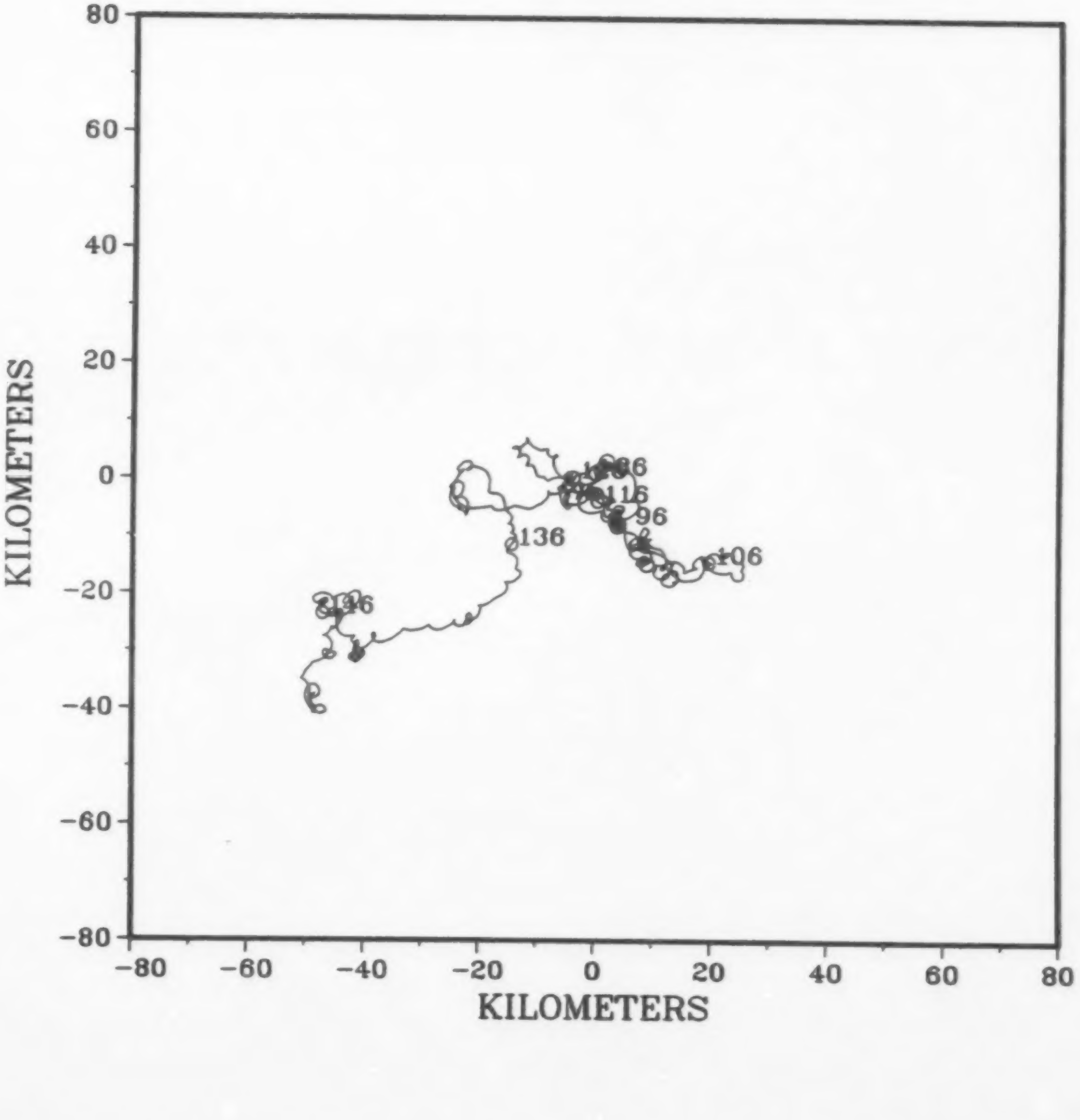
146

RDI 62.80 M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KILOMETERS
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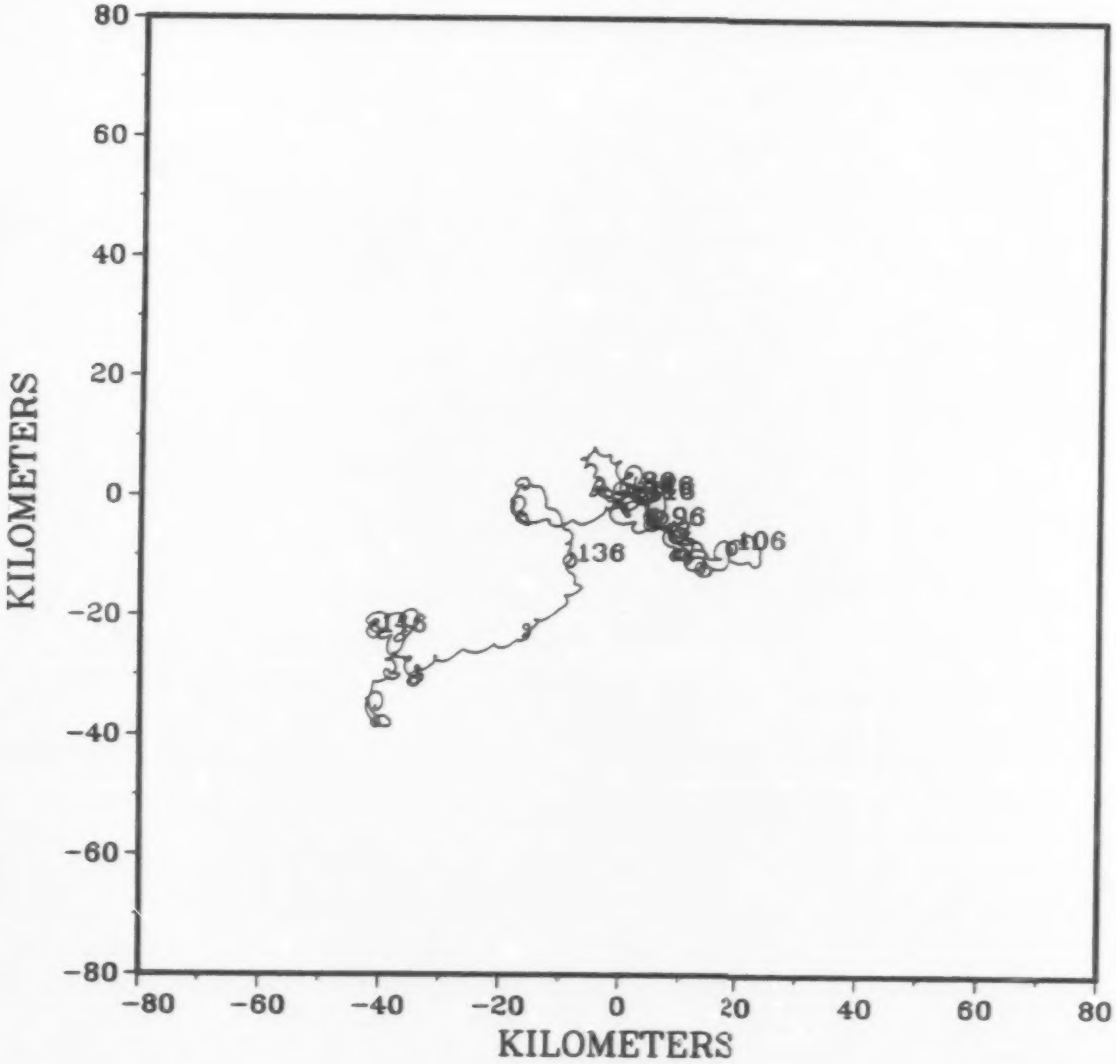

RDI 71.30 M

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−80
KILOMETERS
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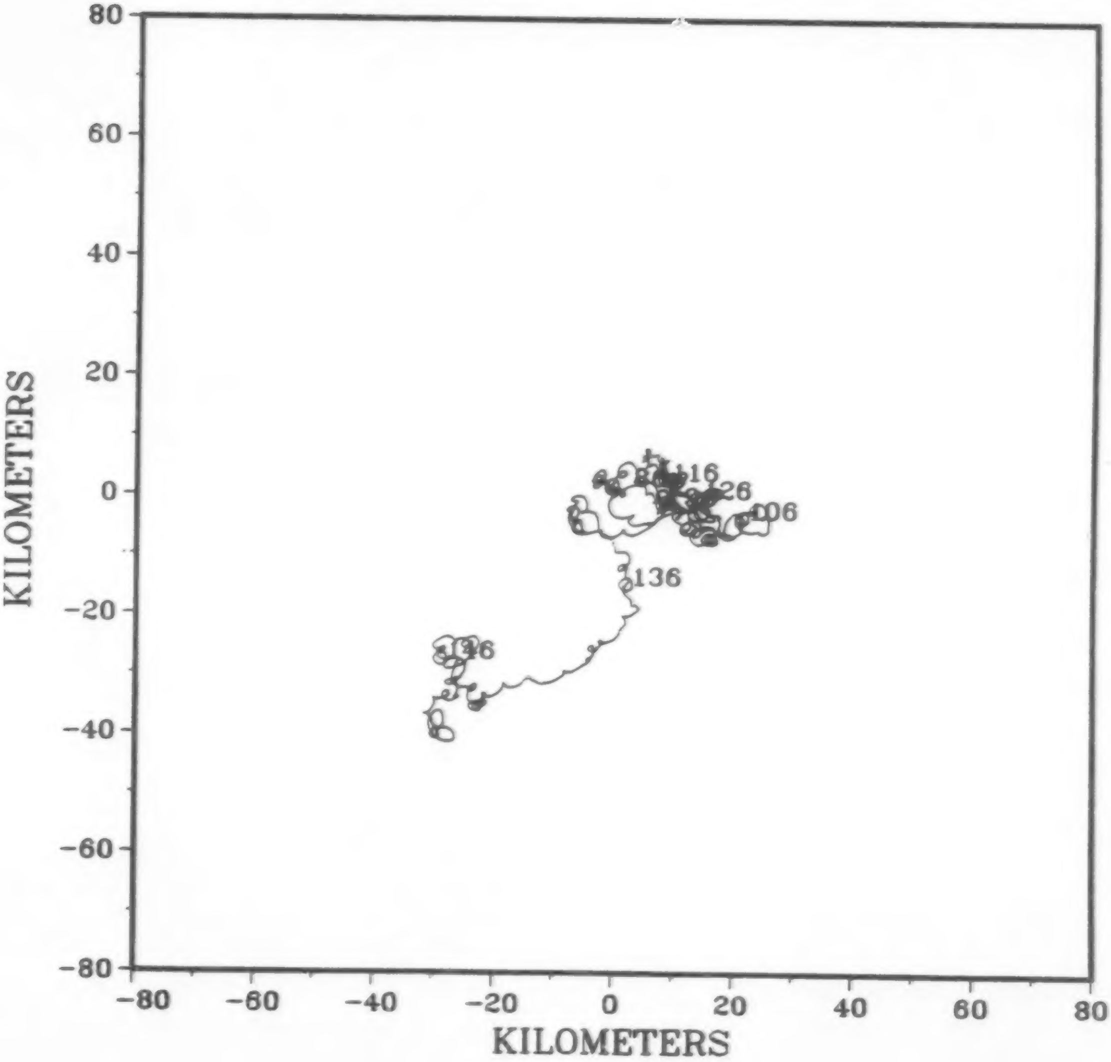
KILOMETERS
96
106
136
146

RDI 79.80 M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-40
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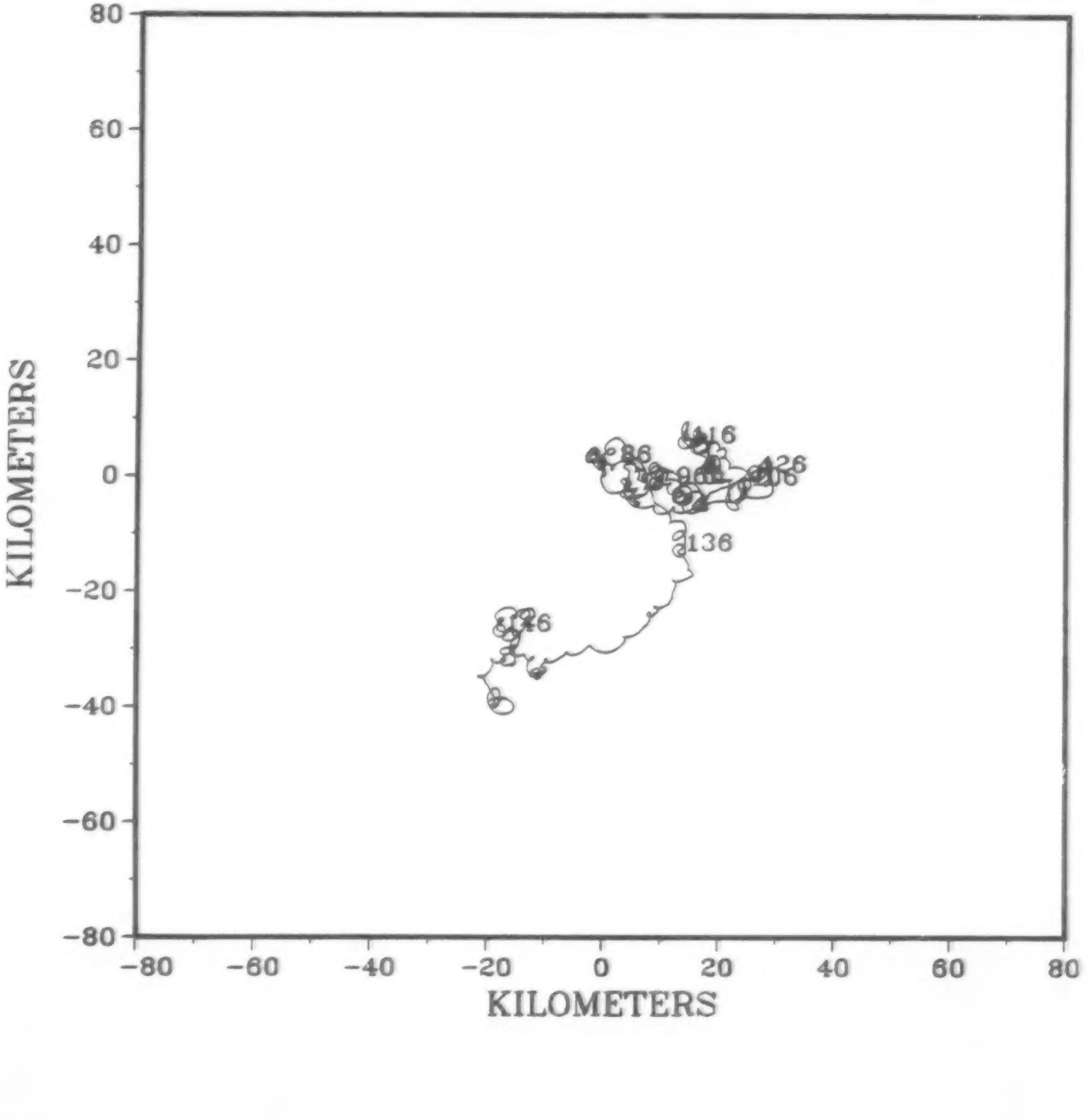
40
60
80
KILOMETERS
116
26
106
136
146

RDI 88.30 M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KILOMETERS
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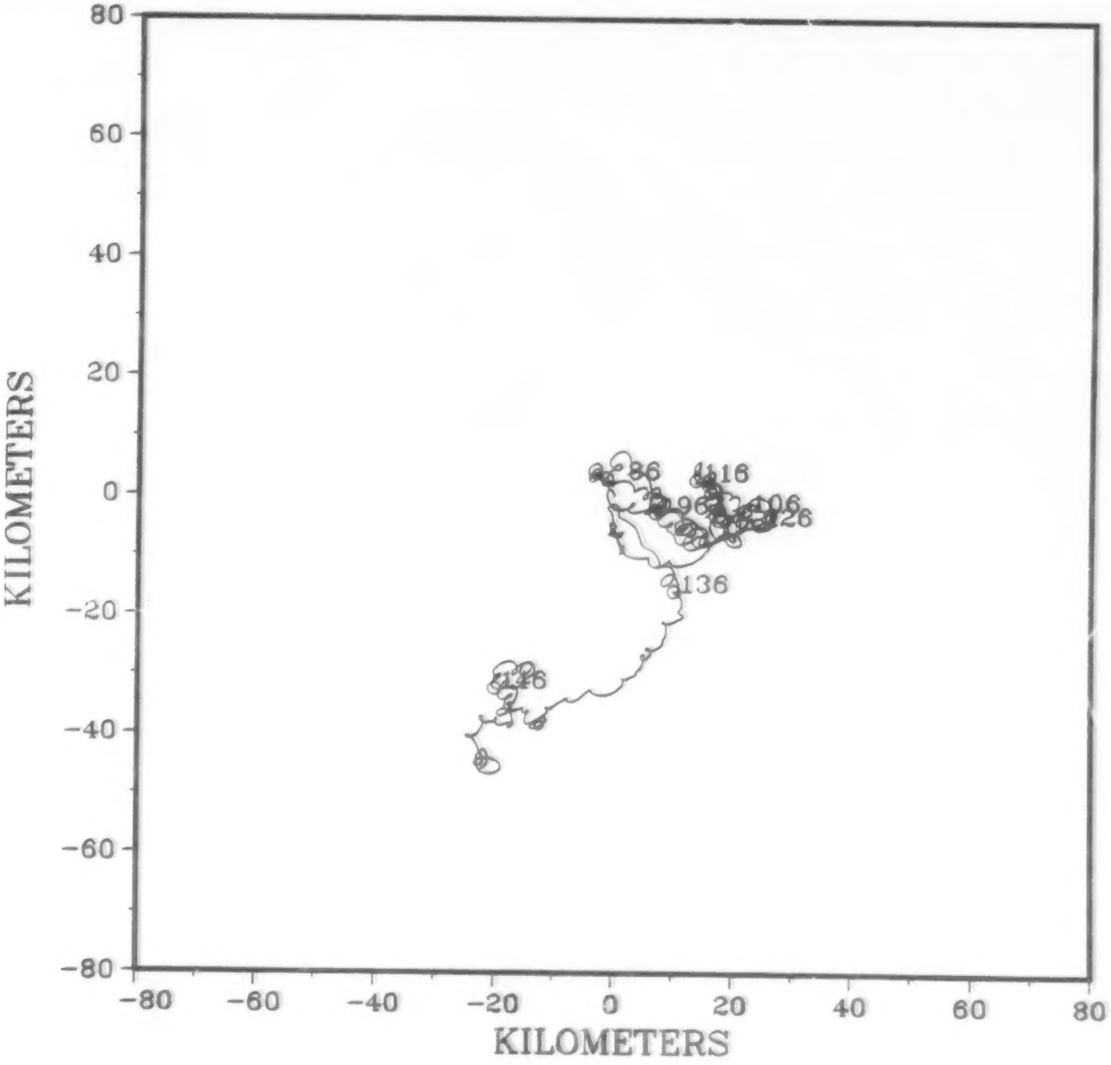
40
60
80
KILOMETERS
116
86
96
126
106
136
146

RDI 96.80 M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KILOMETERS
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96
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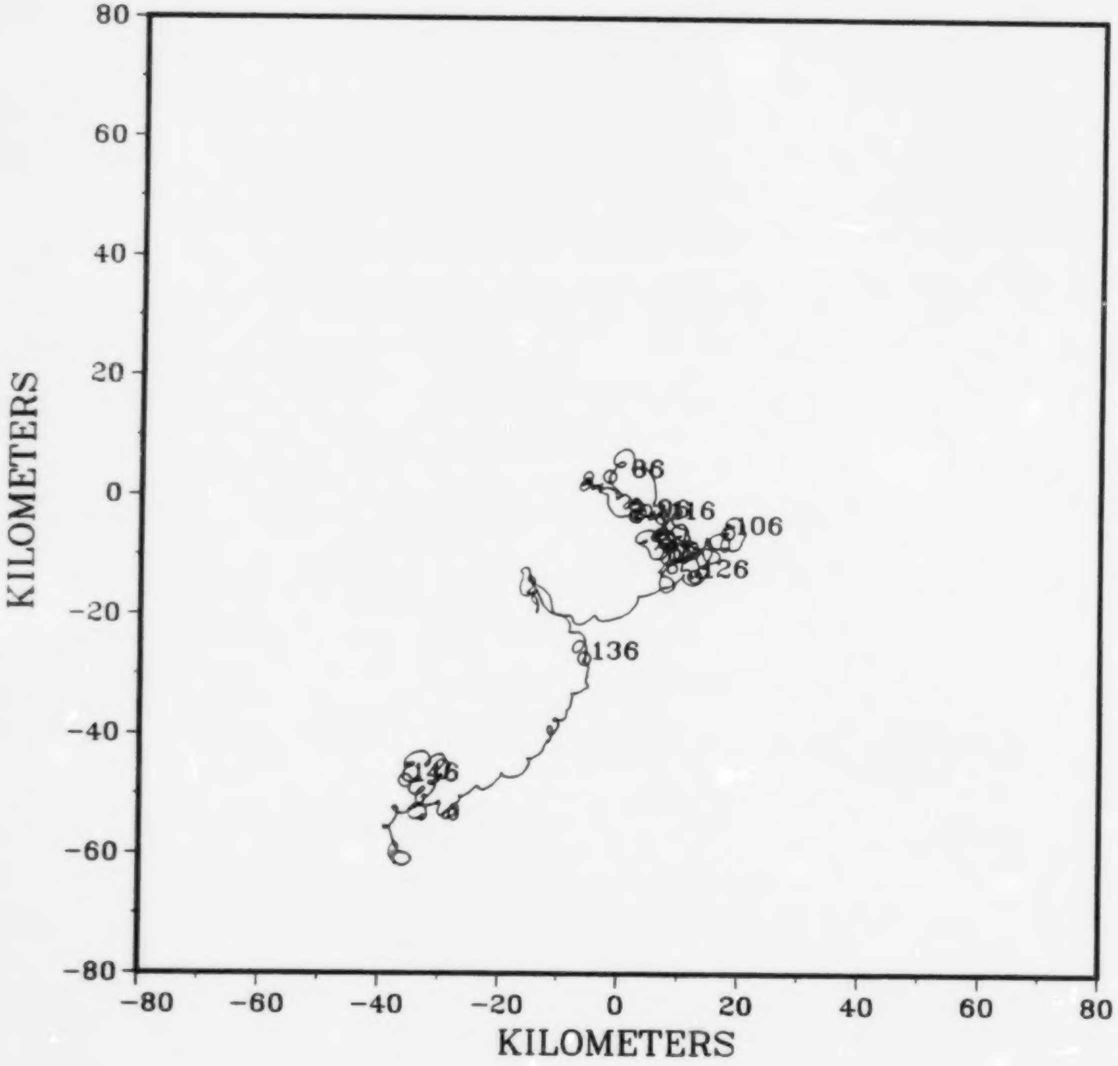
136
146

RDI 105.30 M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60
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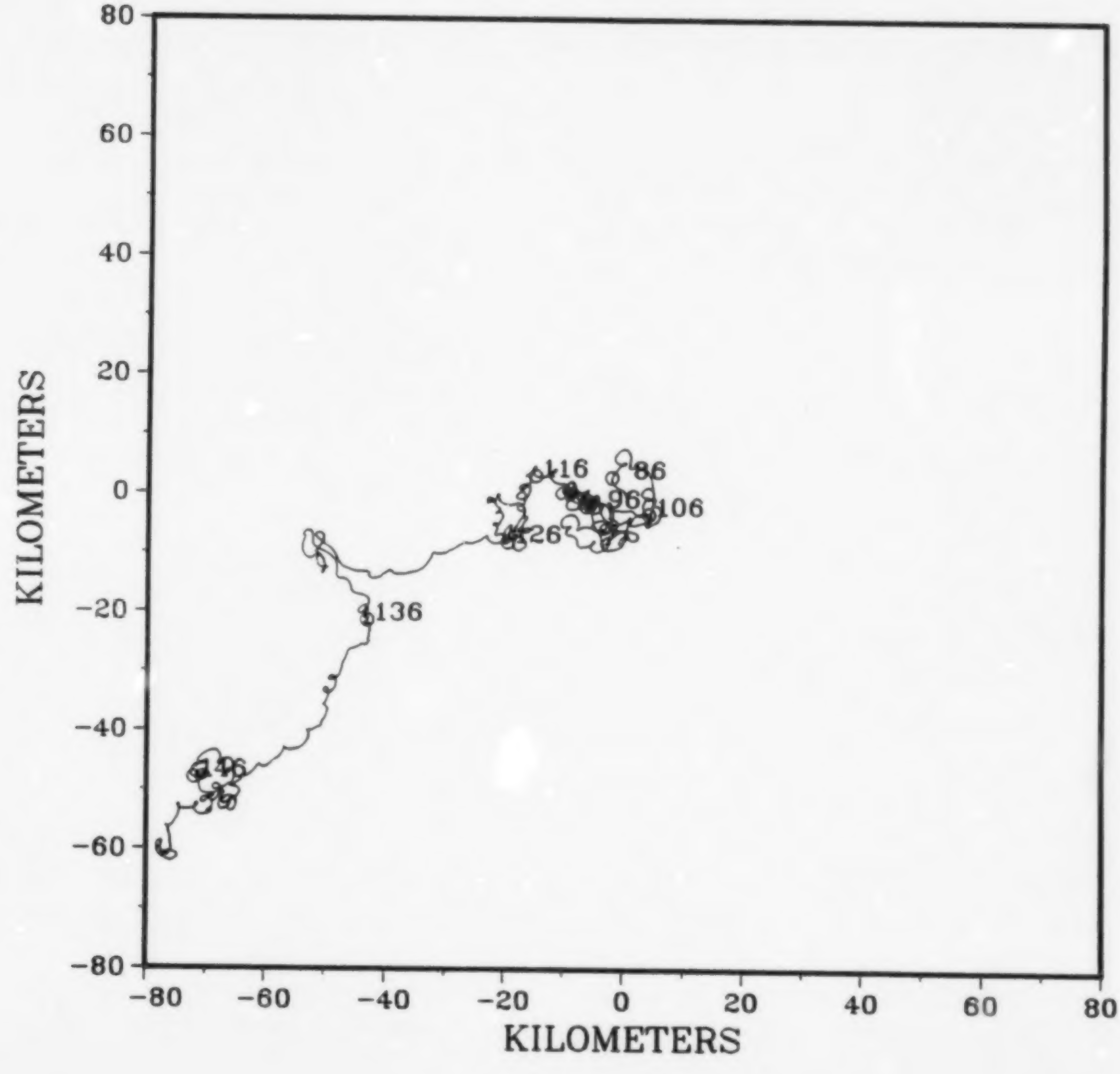
KILOMETERS
KILOMETERS
86
96
116
106
126
136
146

RDI 113.80 M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KILOMETERS
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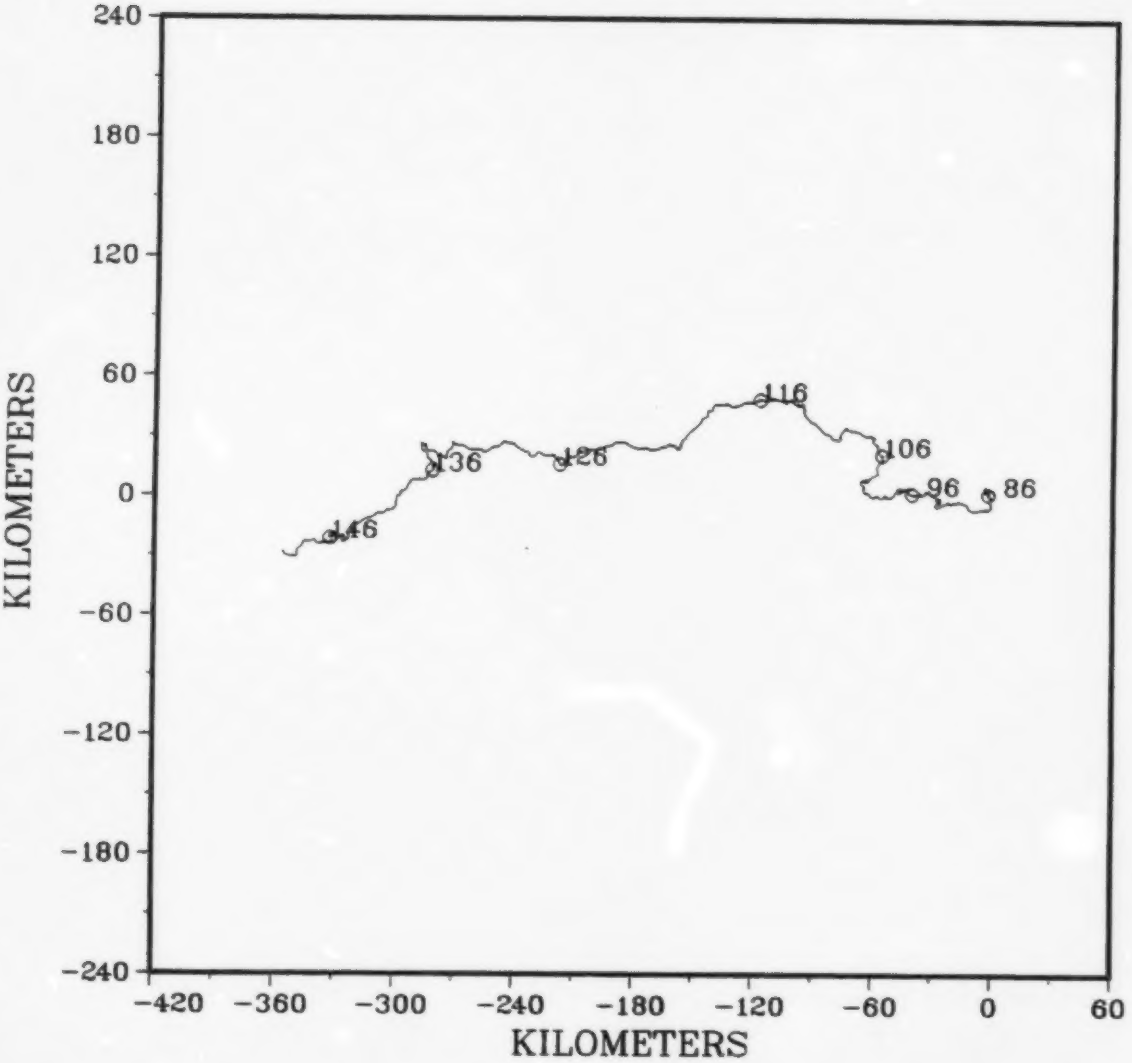
40
60
80
KILOMETERS
116
86
96
106
126
136
146

RDI 122.30 M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120
60
0
-60
-120
-180
-240
KILOMETERS
-420
-360
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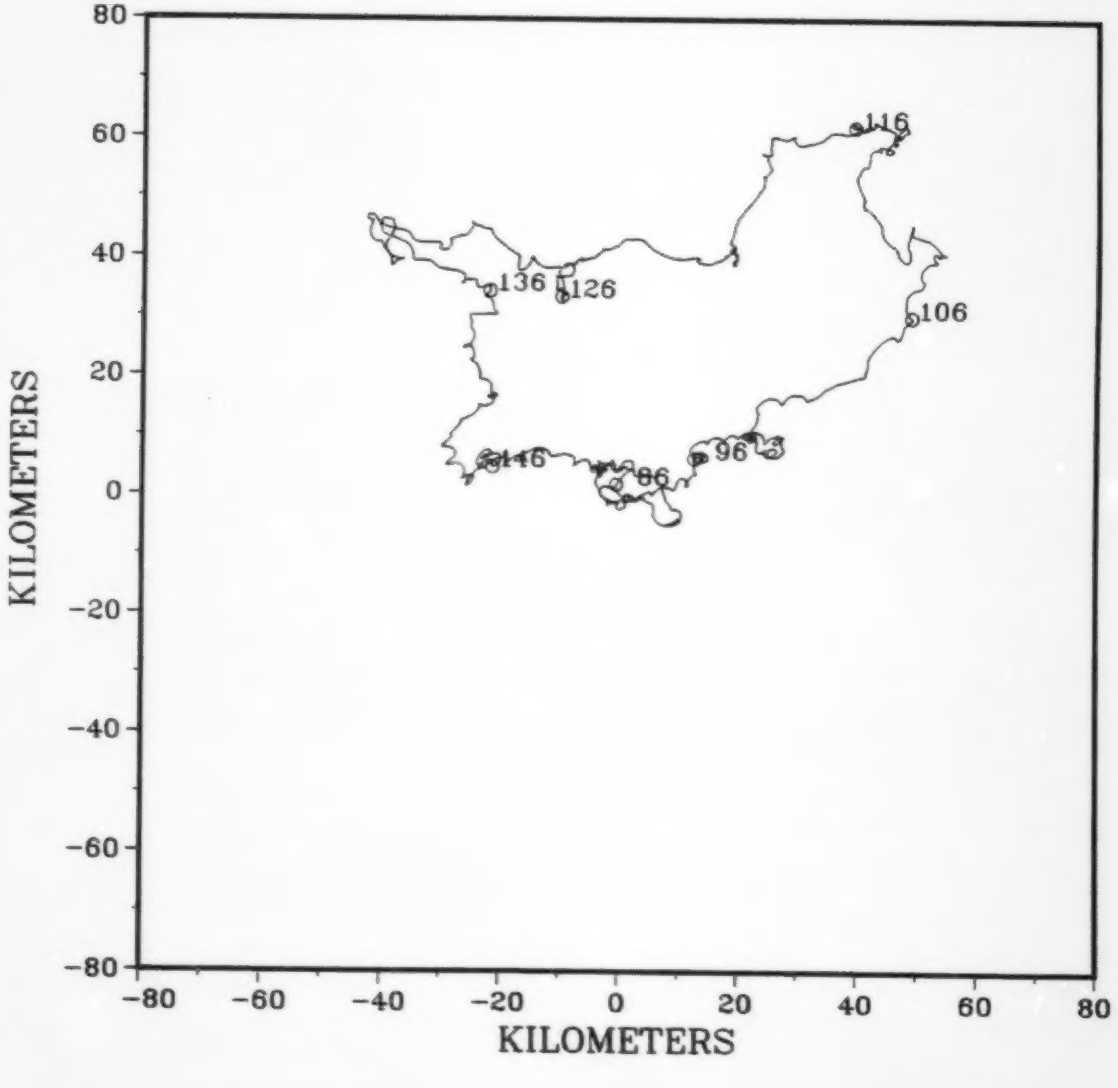
-120
-60
0
60
KILOMETERS
146
136
126
116
106
96
86

RDI 122.30 M


116
106
136
126
146
96
86
3
KILOMETERS
KILOMETERS
80
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40
20
0
−20
−40
−60
−80
−80
−60
−40
−20
0
20
40
60
80

References

Carsey, F.D., S.A. Digby-Argus, M.J. Collins, B. Holt, C.E. Livingstone, C.L. Tang, 1989. Overview of LIMEX '87 ice observations, IEEE Transactions on Geoscience and Remote Sensing, 468-482.

Tang, C.L. (editor), 1987. Southern Labrador margional ice zone study - a pilot field program of LIMEX, Can. Tech. Rep. Hydrogr. Ocean Sci., No. 99:iv+25 pp.

Conversion between Calendar and Julian dates for 1990

Julian	Calendar	Julian	Calendar	Julian	Calendar	Julian	Calendar
60	March 1	91	April 1	121	May 1	152	June 1
61	2	92	2	122	2	153	2
62	3	93	3	123	3	154	3
63	4	94	4	124	4	155	4
64	5	95	5	125	5	156	5
65	6	96	6	126	6	157	6
66	7	97	7	127	7	158	7
67	8	98	8	128	8	159	8
68	9	99	9	129	9	160	9
69	10	100	10	130	10	161	10
70	11	101	11	131	11	162	11
71	12	102	12	132	12	163	12
72	13	103	13	133	13	164	13
73	14	104	14	134	14	165	14
74	15	105	15	135	15	166	15
75	16	106	16	136	16	167	16
76	17	107	17	137	17	168	17
77	18	108	18	138	18	169	18
78	19	109	19	139	19	170	19
79	20	110	20	140	20	171	20
80	21	111	21	141	21	172	21
81	22	112	22	142	22	173	22
82	23	113	23	143	23	174	23
83	24	114	24	144	24	175	24
84	25	115	25	145	25	176	25
85	26	116	26	146	26	177	26
86	27	117	27	147	27	178	27
87	28	118	28	148	28	179	28
88	29	119	29	149	29	180	29
89	30	120	30	150	30	181	30
90	31			151	31		